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UNIVERSITY OF ILLINOIS
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BUILDING ORDINANCES

OF THE

CITY OF

MILWAUKEE

1914



Building Ordinances

City of Milwaukee

*Ordinances Comprising that part
of the Building Code of the City
of Milwaukee, passed by the
Common Council up to the date
of January 1st, 1914. : :*

See Index on Following Page for Location of
Particular Ordinances

W. D. HARPER, Inspector of Buildings

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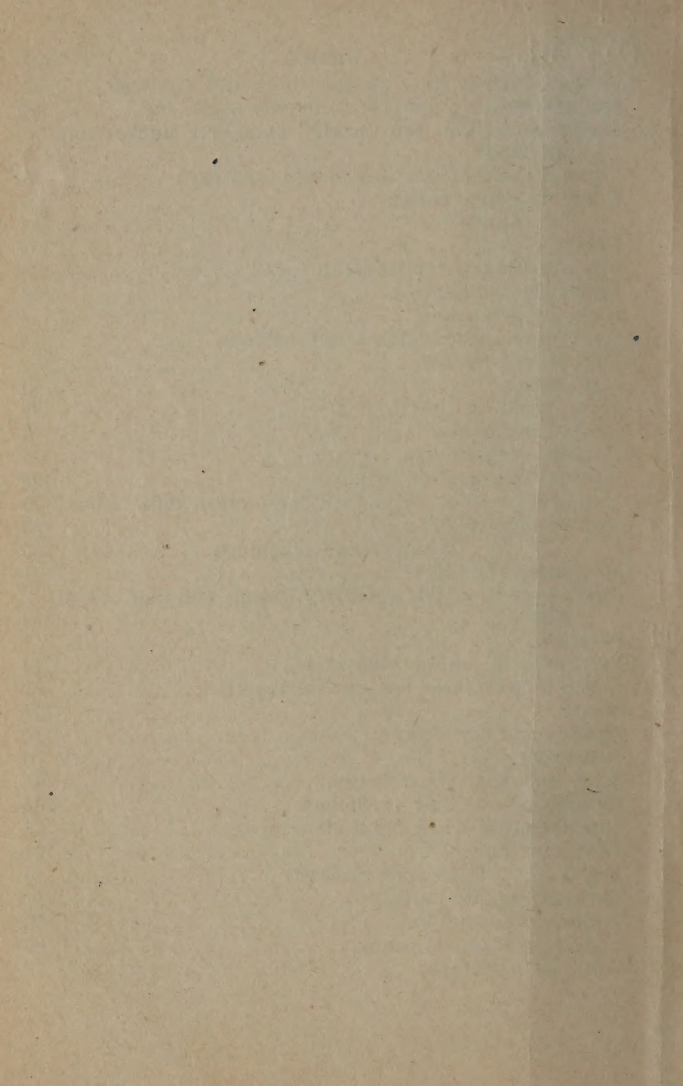
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Milwaukee

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PART OF BUILDING CODE

of
CITY OF MILWAUKEE

AN ORDINANCE

Regulating the Issuing of Permits.

The Common Council of the City of Milwaukee do ordain as follows:

Section 1. Before commencing with the execution or installation of any work pertaining to the erection, construction, alteration or maintenance of any building or structure, a permit shall be secured from the Inspector of Buildings by the owner or his agent and it shall be unlawful to commence any such work unless such permit shall first have been obtained.

Sec. 2. No permit shall be required for the repair of buildings or structures or for minor alterations which do not involve any change of their use, or of their areas, or their structural parts, or their means of communication, stairways, elevators, fire escapes, egress, light or ventilation. No building shall be repaired or altered that has deteriorated or has been damaged by any cause 50 per cent. or more of its original value, and no permit shall be granted to repair or alter such building.

Sec. 3. Application for a permit shall be made in writing by the owner or his agent to the Inspector of Buildings upon blank forms furnished by the Inspector of Buildings, and he shall upon request furnish a copy to the applicant.

Sec. 4. The application shall state the name of the owner of the building or structure, the name of the own-

er of the land upon which it is to be erected, the description of the land by lot, block and ward and the street, the size and kind of construction and the intended use of the building or structure, the safe floor loads for which the building is designed, except in the case of a dwelling, and such other pertinent information as the Inspector of Buildings may require, and the estimated cost.

Sec. 5. In case the applicant shall fail to give a just estimated cost of the work for which the permit is asked it shall be the duty of the Inspector of Buildings to estimate the cost of the buildings to the best of his knowledge and this amount shall be placed in the application.

Sec. 6. In all cases except for the erection of a sign, awning or the alteration of an elevator or dumbwaiter, a situation plan shall be submitted with the application. The application and the situation plan shall be kept on file as a permanent record in the office of the Inspector of Buildings.

This situation plan shall be drawn in ink or other indelible medium to a scale of $\frac{1}{16}$ inch to a foot if the size of the lot permits, otherwise, not smaller than $\frac{3}{32}$ inch to one foot and shall show the location, number and size of the lot, the width of adjoining streets or alleys, the ground plan of a proposed structure with all projections and the main dimensions of the structure and its distance from its lot lines in figures.

Sec. 7. Plans and specifications shall also accompany the applications.

Plans or drawings shall consist of the foundation and footing plan, and if of a building, a plan of each floor showing the computed superimposed load of each floor, a roof plan, a transverse or longitudinal section, at least two elevations and the necessary structural plans. One typical floor plan serving for several stories, if alike, will be permitted. These drawings shall be rendered indelibly on paper or cloth and shall be marked with the name and address of the owner and author and shall be drawn to a scale not smaller than $\frac{1}{8}$ inch to one foot.

The dimensions of the structure and the dimensions of the structural parts thereof shall be accurately shown

in figures; all plumbing fixtures, drain pipes and heating apparatus shall be shown. In addition thereto plans shall be submitted as required by any other ordinance.

Sec. 8. The Inspector of Buildings shall have a reasonable time to examine the plans and specifications and he shall approve of them if he finds them in all respects in conformity with the provisions of the city ordinances, shall affix his official stamp to them and shall return them to the applicant, and a true copy of the stamped drawings and specifications shall be filed with the Inspector of Buildings and shall be kept on record for 30 days after the completion and final inspection of the building. At the expiration of this period the Inspector of Buildings may destroy such copies of stamped drawings and specifications or may surrender them to their authors upon request or may keep them in the municipal vaults on permanent record.

Sec. 9. It shall be unlawful to erase, alter or modify any lines, letters, figures or coloring contained upon such drawings or specifications stamped by the Inspector of Buildings or filed with him for reference. If, during the progress of the execution of the work, it is desired to deviate in any essential manner from the terms of the application or drawings or specification notice of such intention shall be given in writing to the Inspector of Buildings, and his written approval shall first be obtained before such alteration or deviation may be made.

Sec. 10. The Inspector of Buildings is authorized to issue a permit for the erection of part of a building or structure provided that the drawings and data submitted with the application furnish sufficient information of the parts to be added in the future and that complete plans and specifications are submitted to and approved by the Inspector of Buildings and permit obtained before any parts of the structure are erected above the grade line.

Sec. 11. No factory, warehouse or other commercial building shall be occupied unless a final inspection after completion is made by the Inspector of Buildings and a framed placard is posted in a conspicuous place in each room or on each floor by the owner or agent showing the safe allowable floor loads. Such placards shall be kept

permanently posted and it shall be unlawful to place any loads on the floor in excess of the stated loads.

Sec. 12. If building operations are not commenced within six months of the date of the issuance of the permit or if there is a cessation of the building operations of more than six months continuously or intermittently said permit shall have lapsed and be void and the operations shall not be begun or resumed before a new permit is obtained and the fees paid therefor.

Sc. 13. The fees for permits required by this and any other ordinance shall be paid into the city treasury and credited to the general city fund and the amount shall be as follows: For new buildings, additions and spaces excavated below a sidewalk, one cent for every 100 cubic feet of the contents of such structure; said cubic contents shall be measured for the entire structure from the lowest floor. For alterations or repairs or for structures that cannot be figured by the cubic foot, one (1) dollar for every one thousand (1,000) dollars of their cost. But the minimum fee for any of the above mentioned permits shall be one (1) dollar.

For moving or wrecking a structure, one (1) dollar.

For the installation of tanks containing liquids as regulated by the ordinance, two (2) dollars.

For the erection, alteration or repair of an elevator or dumbwaiter as regulated by the elevator ordinance, two (2) dollars.

For the erection of an awning as regulated by the ordinance, one (1) dollar.

For the installation of an internal combustion engine, three (3) dollars.

For the installation of a moving picture machine, one (1) dollar.

For the erection of a sign, fifty cents.

Sec. 14. Any person, firm or corporation owning, controlling or managing any building or premises wherein or whereon anything in violation of this ordinance shall exist or shall be placed, or any person, firm or corporation employed who shall assist in the commission of any violation or any of the requirements hereof, or who shall build contrary to the plans or specifications submitted to the Inspector of Buildings, provided such plans and

specifications are in accordance with this ordinance, or any person, firm or corporation who shall neglect to do each and every act required herein whether such act has been approved by the Inspector of Buildings or not, and the fact that the plans and specifications are accepted by the Inspector of Buildings shall be no defense to a violation of the provisions of any ordinance; shall for each and every day's violation or non-compliance be liable to a fine of not less than five (5) dollars nor more than five hundred (500) dollars or in default of fine by imprisonment in the House of Correction not less than one day nor more than six months.

Sec. 15. All parts of ordinances contravening the provisions of this ordinance are hereby repealed.

Sec. 16. This ordinance shall take effect and be in force from and after its passage and publication.

Passed Oct. 13, 1913.

Resolution.

File Number 5537.

Whereas, School buildings have heretofore been erected on and over streets and alleys in the City of Milwaukee before such streets and alleys have been vacated; therefore, be it

Resolved, By the Common Council of the City of Milwaukee, that the Building Inspector of said city be and he is hereby directed to refuse to grant building permits for the erection of school buildings on and over streets or alleys until the same have been properly and legally vacated.

Passed October 13, 1913.

For fees required by Electric ordinance, see Electric ordinance, page 184.

File Number 4838.

50—AN ORDINANCE

Defining Terms of the Building Code.

The Mayor and Common Council of the City of Milwaukee do ordain as follows:

•Section 1. The purpose of the definitions, as here laid down, shall be to give the basis for the interpretation of the different terms used in this building code.

Sec. 2. Fireproof Construction. A building is of fireproof construction when all the walls, partitions, piers and columns, also floor, ceiling, roof and stair construction, are built of incombustible material, and when all metallic structural members are protected from fire by an incombustible fire resisting covering of low heat conduction.

Sec. 3. Mill Construction. A building is of mill construction when all walls are built of incombustible material, and when posts, girders and beams are of wood which measures in width at least one-half ($\frac{1}{2}$) its depth. No beam shall measure less than 72 square inches, and no post shall measure less than 100 square inches in section area. When any steel or iron is used for structural purposes it shall be fireproofed with not less than one (1) inch incombustible material or metal lath and plaster. The floors shall not be less than three (3) inch lumber having grooves and splines at their joints.

The lower thickness of the roof planking shall not be less than two (2) inch lumber tongued and grooved.

Sec. 4. Ordinary Construction. A building is of ordinary construction when the enclosing walls consist of incombustible material. When the wood joists, rafters or studs are of smaller section area than required for mill construction.

Sec. 5. Frame Buildings. A frame building is a building whose structural parts and enclosing walls consist of wood. If such enclosing walls are veneered or encased, the building is also termed a frame building.

Business Buildings. A business building is a building used for a purpose other than private residences, apartments, tenement or boarding houses.

Area. An open subspace adjoining a building.

Alley. A public thoroughfare thirty (30) feet or less in width.

Assembly Hall. A room (not in a residence) which is used for assemblage of more than 100 persons.

Building. A structure affording shelter.

Addition. Any change which increases the cubical contents of a building.

Alterations. Any change, addition or modification in construction.

Apartment Building. An apartment building is a building used entirely or in part as a residence by more than two (2) households, independently of each other, and having a common right to the stairways, yards and other conveniences.

Basement and Cellar. A story not more than one-half ($\frac{1}{2}$) its height below the grade is considered a basement; if it is more than one-half ($\frac{1}{2}$) its height below the grade it is considered a cellar. In a business building the term "basement" will cover both definitions. The ceiling of a story more than nine (9) feet above the grade shall be considered the first story. Grade to be defined as in Height of Building definition.

Bay Windows. Windows projecting from outer wall and supported by a foundation. Windows supported by corbels or brackets are termed oriel windows.

Building Line. A dividing line between two or more pieces of property.

Length of a Building. The longest horizontal measurement of a building.

Column. Isolated upright supports, piers, pillars or posts.

Corridor. A passageway within a building.

Elevator. An elevator consists of a shaftway and machinery in a permanent location and a platform or cage for raising or lowering objects.

A passenger elevator is for conveying persons within an enclosing cage.

A freight elevator is for carrying all other objects.

A dumb waiter is a small elevator for light loads, and shall not be used to convey persons.

Dwelling. A building which is used as a residence by not more than two families and more than five boarders in each.

Footing. The bottom course or courses of a wall, column, pier, pillar or post.

Foundations. The lowest part of a structure, and any parts supporting the same, including the footing. Foundations shall be constructed to include all walls and piers built below the curb line, or nearest tier of

beams to the curb, or to the average level of the ground adjoining the walls, to serve as supports to wall, piers, columns, girders, posts or beams.

Factor of Safety. The quotient obtained by dividing the breaking load by the safe load.

First Story. A story whose floor is at or next to the level of the sidewalk or adjoining ground, also called ground floor, and whose ceiling is more than nine (9) feet above the grade.

Hall. This term includes places of assemblage, stairways, passageways and corridors.

Height of building. The height of a building is measured at the center line of its principal front at the street grade or if setting back from the street at the grade of the ground adjoining the building to the highest part of the roof, if a flat roof, or to height two-thirds of the roof if a gabled or hipped roof. If the grade of the lot or adjoining street in the rear or alongside of the building falls below the grade of the front, the height shall be measured in the center of the side showing the greatest fall.

Height of a Story. The height of a story is the perpendicular distance from one floor to the next or from a floor to the roof.

Length of Wall. The length of a wall is its horizontal dimensions between adjoining cross walls or adjoining walls running at an angle to it, or between offsets of not less than four (4) feet.

Thickness of Wall. The minimum distance between its two faces.

Foundation and Basement Walls. The part of a wall below the first floor.

Bearing Wall. A wall supporting a load.

Cross Wall. Any internal wall running at an angle with reference to another wall.

Curtain Wall. A non-bearing outside wall, supported in each story in a building of skeleton construction.

Division Wall. A wall subdividing a building.

Party Wall. A wall built upon the dividing line of adjoining premises and intended for joint use.

Grade. The surface of the premises or public highway adjoining the building.

Incombustible Covering. A covering which will not be destroyed by fire without the assistance of combustible material.

Lot Line. The line of demarcation of a piece of land.

Repairs. The renewal of any part of any existing building for the purposes of its maintenance in its present form of construction and occupancy.

Skeleton Construction. This term shall apply to buildings wherein all loads are transmitted by a framework of metal or reinforced concrete from the top of the building to the foundation.

Shed. Is a building not over one story in height and having at least one side open; excepting lumber, bark, coal, freight and storage sheds, which may be enclosed on all sides.

Stair Hall. Includes the stairs, landings, and any portion of a building which connects it with the outside.

Tenement. (See apartment houses.)

Veneer. The outer facing of brick, stone, concrete, tile, not less than four (4) inches thick, or of lath and cement plaster not less than two (2) inches thick, an enclosing wall used for the protection of the backing but not counted as adding anything to its strength.

Public Buildings. Are all buildings owned or controlled by a municipality.

Quasi-public buildings are buildings used by the public in general such as railroad stations, assembly halls, theaters, churches, etc.

Business buildings are buildings used wholly or in part for business purposes.

Tenements. To this class belong boarding houses, lodging houses for more than six guests, dormitories, hospitals, asylums not controlled by the public, apartment or flat buildings for more than two families.

Corner Lot. A corner lot is the lot situated at the intersection of two public streets; an alley shall not be considered a street unless it is over thirty (30) feet wide.

Attic Story. A story situated wholly or partly in the roof. Such space shall not be considered a separate story unless it is arranged to contain more than four

(4) rooms in connection with lower stories or is arranged to contain a separate family.

Structure. Anything built of more than a single post or pier joined or fastened together, shall be considered a structure.

Sec. 6. All ordinances or parts of ordinances contravening the provisions of this ordinance are hereby repealed.

Sec. 7. This ordinance shall take effect and be in force from and after twenty days following its passage and publication.

Passed June 23, 1913.

AN ORDINANCE

Regulating Excavations, Foundations and Piling.

The Common Council of the City of Milwaukee do ordain as follows:

Section 1. Before commencing with the excavation or driving piles for any foundations of any building or structure a building permit shall be first obtained from the Inspector of Buildings. An application for a building permit shall be filed with the Inspector of Buildings, together with plans and specifications of the building showing the location of the building or structure, also the size and material of the foundations and if required the loads to be placed thereon, and, where piles are to be driven the spacing, size and materials of the piles and the load to be placed on each, and if said application, drawings and specifications are in accordance with this and other ordinances the Inspector of Buildings shall issue a permit after the applicant has paid into the city treasury the amount of permit fees established for each permit.

Sec. 2. Any person, firm or corporation making excavations or causing the same to be made shall properly guard them and shall so protect them that the adjoining soil shall not cave in, and no one shall excavate so as to injure any adjoining ground or building.

Sec. 3. The Inspector of Buildings may require any applicant for a permit to ascertain by boring or test, the nature of the soil upon which he proposes to build.

The permissible loads on soils per square foot shall be as follows:

On quicksand and alluvial soils.....	1½	ton
Soft clay	1	ton
Ordinary clay and sand together in layers wet and springy	2	tons
On clay or fine sand, firm and dry.....	3	tons
On sand compact and well cemented.....	4	tons
On gravel and coarse sand well packed.....	5	tons
On hard pan or shale.....	6	tons
On bed rock.....	20	tons

Sec. 4. The trenches for foundations shall be kept free from water until after the completion of this work and until the cement is properly set.

Sec. 5. Foundations shall be proportioned to the computed loads and every building except those resting on solid rock shall have foundations of iron, steel concrete, stone or hard burnt sewer brick, or shall have foundations resting upon piles, ranging timbers or reinforced concrete where solid earth or rock is not found.

Sec. 6. The bottom of all foundations shall be at least five feet below the adjacent grade.

Sec. 7. No pile of less than six inches in diameter at small ends shall be used.

The heads of wood piles shall be protected against splitting while being driven, and after being driven, the heads shall be cut off in the solid wood. The top of all wood foundations shall be below the permanent ground water level. All iron or steel in foundations shall be protected with a covering of not less than six inches of concrete.

The maximum load on a timber piles shall not exceed five hundred pounds per square inch on top of such pile.

The safe loads on a pile shall be determined by and shall not exceed the following formula:

$$L = \frac{2WH}{S + \frac{1}{16}} \text{ for steam hammer.}$$

$$L = \frac{2WH}{S + 1} \text{ for drop hammer.}$$

in which formula

L = safe load in pounds.

W = weight of hammer in pounds.

H = fall of hammer in feet.

S = penetration under last blow in inches.

assumed to be sensible at an approximately uniform rate.

Whenever there is no reliable record obtainable of the driving of the piles and their sinking under the last ten blows of the hammer, the Inspector of Buildings may require loading tests made by the owner, such tests shall determine the permissible loads on wooden piles by the same methods as hereafter required for concrete piles.

The width of a pile foundation shall not be less than the width of the wall resting upon it.

Sec. 8. Piles may be of either plain or reinforced concrete.

Plain concrete piles shall be molded in rigid forms left in place.

Reinforced concrete piles if properly designed to resist the shock of driving, and if driven with a cushion to lessen the shock or if put down by water jet, may be employed for foundations.

In all cases where concrete piles are used their bearing value shall be determined by sinking one or more piles and loading them after they have hardened. Such test loading shall be made by the owner in the presence of the Inspector of Buildings or his assistants.

Not over one-half of the test load under which such pile begins to settle shall be allowed as a safe load and under no circumstances shall the safe load exceed 500 pounds per square inch of the sectional area of such pile. No part of a building or structure shall be constructed on such piles until the safe load on such pile is deter-

mined by the Inspector of Buildings, but the fact that the tests where made shall be no defense to a violation of any of the provisions of this ordinance.

Concrete piles shall not be of a leaner mixture than one part Portland cement, two parts of sand and four parts of gravel or crushed stone, that will pass through a one inch ring and the concrete shall be thoroughly mixed in a batch mixer.

Sec. 9. Any person, firm or corporation owning, controlling or managing any building or premises wherein or whereon anything in violation of this ordinance shall exist or shall be placed, or any person, firm or corporation employed who shall assist in the commission of any violation or any of the requirements hereof, or who shall build contrary to the plans and specifications submitted to the Inspector of Buildings provided such plans and specifications are in accordance with this ordinance, or any person, firm or corporation who shall neglect to do each and every act required herein, whether such act has been approved by the Inspector of Buildings or not, and shall for each and every day's violation or non-compliance be liable to a fine of not less than five (5) dollars nor more than five hundred (500) dollars, or in default of fine, by imprisonment in the House of Correction not less than one day nor more than six months.

Sec. 10. All parts of ordinances contravening with this ordinance are hereby repealed.

Sec. 11. This ordinance shall take effect and be in force from and after its passage and publication.

Passed September 11, 1911.

File Number 5245.

116—AN ORDINANCE

Regulating Walls. (p. 483-486.)

The Mayor and Common Council of the City of Milwaukee do ordain as follows:

Section 1. All buildings shall have foundation walls built of hard brick, stone, concrete or other hard and incombustible material. (Wood post foundation not permissible.) Footings under walls shall be of sufficient thickness, strength and breadth to safely bear

the weight to be imposed thereon. Footings shall be at least twelve (12) inches wider than the wall to be supported. Stone footings shall not be less than five (5) inches thick. Plain concrete not less than eight (8) inches in thickness. Foundation wall for frame buildings shall not be less than twelve (12) inches thick if of brick, not less than eighteen (18) inches if of stone, not less than ten (10) inches if of plain concrete or concrete block, when such walls are not more than six (6) feet below the adjacent grade. Foundation walls more than six (6) feet below the grade shall be four (4) inches more in thickness.

Sec. 2. The thickness of walls for buildings, except buildings used exclusively for dwellings or residences, or tenement houses, shall be as follows:

Stories	1	2	3	4	5	6	7	8	9	10	11	12
Basement—												
Stone	20	20	20	24	28	28	32	32	32	36	36	36
Brick	16	16	16	20	24	24	28	28	28	32	32	32
1st Story.....	12	12	16	16	20	20	24	24	24	28	28	28
2nd	..	12	12	16	20	20	20	24	24	24	28	28
3rd	..	..	12	12	16	20	20	20	24	24	24	28
4th	..	..	..	12	16	16	20	20	20	24	24	24
5th	..	..	..	..	12	16	16	20	20	20	24	24
6th	..	..	..	..	..	12	16	16	20	20	20	24
7th	..	..	..	..	..	..	12	16	16	20	20	20
8th	..	..	..	..	..	..	..	12	16	16	20	20
9th	..	..	..	..	..	..	..	..	12	16	16	20
10th	..	..	..	..	..	..	..	..	..	12	16	16
11th	..	..	..	..	..	..	..	..	..	..	12	16
12th	..	..	..	..	..	..	..	..	..	..	..	12

Sec. 3. The thickness of walls of dwellings, residences or tenement houses shall be as follows:

Stories	1	2	3	4	5	6	7	8
Basement	12	16	16	20	20	24	24	24
1st Story	12	12	12	16	16	20	20	20
2nd	..	12	12	12	16	16	16	20
3rd	..	..	12	12	12	16	16	16
4th	..	..	..	12	12	12	16	16
5th	..	..	..	..	12	12	12	16
6th	..	..	..	..	..	12	12	12
7th	..	..	..	..	..	..	12	12
8th	..	..	..	..	..	..	..	12

Sec. 4. If stone is used for basements in place of brick same shall be four (4) inches more in thickness. If the walls are more than 100 feet long without supporting cross walls or offsets of at least four (4) feet the same thickness as the wall, the walls shall be four (4) inches more in thickness than given in the tables.

Sec. 5. If any horizontal section through any part of any bearing walls in any building shows more than 25% area of flues and openings the wall shall be increased four (4) inches in thickness for every ten per cent or major fraction thereof of flue or opening area in excess of 25%.

Sec. 6. The heights of all stories for all given thickness of walls must not exceed eleven (11) feet in clear for the basement, eighteen (18) feet in clear for the first story, fifteen (15) feet in clear for the second story, and fourteen (14) feet in clear for all stories above the second. If any story exceeds these heights respectively, the walls of such story and all stories below same shall be increased four (4) inches in thickness of the thickness given in tables.

Sec. 7. The following provisions shall apply to all buildings to be used for the purpose of theaters, public halls, or places of assembly hereafter built:

The outside walls of any building to be built for the purpose of theaters, public halls or place of assembly, the roofs or ceiling of which are carried on trusses or girders of a span of fifty (50) feet or more shall be as follows:

If the walls are less than twenty-five (25) feet high, they shall be not less than twenty inches thick.

If the walls are more than twenty-five (25) feet high, four (4) inches shall be added to the thickness of twenty-five (25) feet for each fifteen (15) feet or fraction thereof added to the height. Each section of fifteen (15) feet or fraction thereof above the twenty-five (25) feet may be made four (4) inches less in thickness than the section below, but in no case shall the top section be less than twenty (20) inches thick.

An increase of four (4) inches in thickness of such wall shall be made in all cases where they are over 100 feet long without cross walls of equal thickness.

The thickness of the enclosing walls of a building or room used for theater, public halls or place of assembly where such rooms are less than fifty (50) feet wide may be reduced by four (4) inches from the above table.

If one or more stories are built above any room devoted for the purpose of a theater, public hall or place of assembly and such stories are carried on trusses or girders the thickness of the walls shall be increased by four (4) inches for each two (2) stories or part thereof above such rooms.

Buttresses and Enclosed Columns.

Sec. 8. If solid masonry buttresses are employed and placed sixteen (16) feet or less apart, and extended to the foot of the trusses or girders carrying the ceiling, or if iron or steel pillars are inserted in such walls for the support of the superstructure, and at distances not more than eighteen (18) feet between centers, such pillars extending to and carrying the super-imposed trusses or girders, the thickness of such walls may be reduced in proportion to the increase of strength afforded by such buttresses or girders, but in no case shall any such wall be less than twelve (12) inches thick in the top story, four inches being added going downward for each story, or for each gallery, or for each twenty-five feet in height of blank wall. If iron or steel pillars are introduced in said walls, the brick work around same shall be bonded into that of the con-

necting walls, and each of such pillars, shall have no less than eight inches of brick wall, or four inches of fireproof material around it, the brick or fireproofing being measured from the extreme outer dimensions of such iron or steel pillars.

Sec. 9. Curtain walls supported on intermediate beams at every floor level to be not less than eight (8) inches in thickness.

Sec. 10. All stones used for the facing of any building shall not be less than four (4) inches thick. Stone shall be anchored to the backing, and the backing shall be of such thickness as to make the walls, independent of such stone, conform to the thickness required in the tables for thickness of brick walls.

Sec. 11. The front, rear, side and party walls shall be properly bonded together, or anchored to each other every six (6) feet in height by suitable wrought iron anchors.

Sec. 12. The walls and skeleton frame work of every building during the erection or alteration thereof, shall be strongly braced from the beams of every story, and when required shall also be braced from the outside until the building is enclosed, and otherwise be protected against the effects of the weather during all building operations. In no case shall any wall or walls of any building be carried up more than two (2) stories in advance of any other wall, except by permission of the Inspector.

Hollow Walls.

Sec. 13. In all walls that are built hollow, the same quantity of stone or brick shall be used in their construction as if they were built solid, as in this ordinance provided, and no hollow wall shall be built unless the parts of same are connected with proper ties placed not over twenty-four (24) inches apart. The inside four (4) inches of all walls may be built of hard burned, hollow clay or porous terra cotta blocks, properly tied and bonded into the wall, and of the dimensions of ordinary brick.

Sec. 14. All exterior, division and party walls shall have parapet walls carried to thirty (30) inches above the roof and shall be coped with incombustible material,

except buildings having a fireproof roof in which case the parapet walls shall be eighteen (18) inches high.

Sec. 15. No recesses for water, sewer or other pipes shall be made in any exterior nor in any other wall more than one-third ($\frac{1}{3}$) of its thickness, and the recesses around such pipes shall be filled up with solid masonry for the space of one foot at the top and bottom of each story.

Sec. 16. All exterior party or division walls shall be corbeled three courses in depth, with brick work not less than two inches from face of wall on each side to receive the bearing joists, and the space between the joists must be filled up solid with brick work. Wherever joist hangers are used for supporting joists the ledging may be omitted. Wherever it appears that extra or additional stress shall come upon any wall or pier provision shall be made for carrying the same by additional thickness of walls or size of pier.

Sec. 17. All brick laid in non-freezing weather shall be wet immediately before being laid. The brick used in all buildings shall be good, merchantable, well burned brick. Bats smaller than half bricks are not to be used in building brick walls or piers. The bond of brick work shall be formed by laying one course of headers to every six courses of stretches. The sand used for mortar in all buildings shall be clean, sharp sand.

Sec. 18. All bearing piers are to be built of dimension stone, or of merchantable, well shaped brick, and shall not be higher than eight times the least width of the base, nor shall they have a smaller cross section than 12x12 inches. Piers and walls shall have bond stone or bond plates of case or rolled iron sufficient to properly distribute the load. At least one such bond stone or bond plate shall be inserted into each pier for each distance in height equal to four times that of the smallest dimension.

Sec. 19. All stone walls twenty-four (24) inch or less in thickness shall have at least one header extending through the wall in every three feet in height from the bottom of the wall, and in every four feet in length, and if over twenty-four (24) inches in thickness, shall have one header for every six (6) superficial feet on

both sides of the wall, laid on top of each other to bond together, and running into the wall at least two feet. All headers shall be at least eighteen (18) inches in width and eight inches in thickness and shall consist of good, flat stones. No stone shall be laid in such walls in any other position than on its natural bed.

Sec. 20. Walls heretofore built, the thickness of which at the time of their erection was in accordance with the requirements of the then existing laws, but which are not in accordance with the requirements of this ordinance, may be used, if in good condition, for the ordinary uses of party walls, provided, the height of the same be not increased. In case it is desired to increase the height of the existing party or independent walls, which walls are less in thickness than required under this ordinance, the same shall be done by a lining of brick work to form a combined thickness with the old walls of not less than four (4) inches more than the thickness required of a new wall corresponding with the total height of the wall when so increased in height. The said linings shall be supported on proper foundations and carried up to such height as the Inspector of Buildings may require. No lining shall be less than eight inches in thickness, and all lining shall be laid up in a cement mortar, and thoroughly anchored to the old brick walls with suitable wrought iron anchors, placed two feet apart and properly fastened or driven into the old walls in rows alternating vertically and horizontally with each other, the old walls being first cleaned of plaster or other coatings where any lining is to be built against same. Or they may be increased in height when the weight including the dead and superimposed load to be carried by them is uniformly distributed over the entire wall of the building, but in no case shall such load exceed the following loads in pounds to each square inch of area of wall:

Hard burnt solid brick when laid in lime mortar, 120 pounds per square inch.

When laid in cement mortar, 160 pounds per square inch.

When laid in Portland cement mortar, 250 pounds per square inch.

Rubble stone when laid in lime mortar, 90 pounds per square inch.

When laid in cement mortar, 125 pounds per square inch.

When laid in Portland cement mortar, 175 pounds per square inch.

No wooden beam or other timber shall be built into a party wall nearer than 2 inches to the center of such wall.

Floor and Roof Beams.

Sec. 21. Ends of all wooden floor and roof beams shall enter the wall to the depth of four (4) inches, unless the wall is properly corbeled out four (4) inches, in which case brick work or corbeling shall extend to top of joists.

The ends of all such beams shall be so shaped or arranged that in case of any deflection or breaking, they may fall out without doing much injury to the brick wall. All joists entering any brick or stone wall shall be splayed one-quarter ($\frac{1}{4}$) inch to one inch shorter at the top edge.

Anchors.

Sec. 22. Each tier of beams shall be anchored to the side, front, rear or party walls at intervals of not more than eight (8) feet apart, with good, strong, wrought iron anchors. The ends of beams resting upon girders shall be butted together, end to end, and strapped with wrought iron straps of the same size and distance apart, and in the same beam as well as the wall anchors, or they may lap each other at least twelve (12) inches and be well spiked or bolted together where lapped. Where beams are supported by girders, the girders shall be anchored to the walls and fastened to each other by suitable straps.

Every pier or wall, front or rear, shall be well anchored to the beams, with the same sized anchors as are required for the side walls, which anchors shall hook over the second beam.

Sec. 23. All flues in party walls must be located at least four (4) inches from center lines of said walls.

Sec. 24. All ordinances or parts of ordinances con-

travening the provisions of this ordinance are hereby repealed.

Sec. 25. This ordinance shall take effect and be in force from and after twenty days following its passage and publication.

Passed Sept. 2, 1913.

File Number 4561.

94—AN ORDINANCE

Regulating Concrete Construction in Buildings.

The Mayor and Common Council of the City of Milwaukee do ordain as follows:

Reinforced Concrete.

(a) Definition.

Section 1. Reinforced concrete is having within its mass a combination of metal so arranged as to cause the two materials to act together in resisting all induced stresses.

(b) Plans and Specifications.

Before commencing the construction of any reinforced concrete work complete plans and specifications together with all necessary details of reinforcing material shall be filed with the Inspector of Buildings for approval and a building permit secured therefor. In no case shall the construction as outlined on the approved plans and specifications be deviated from without the written consent of the Inspector of Buildings.

General Assumptions.

(a) Loads.

Sec. 2. The loads or forces to be resisted consist of the dead load or weight of the structure, and the live loads and forces which are variable. Any dynamic effect of live load must be properly provided for.

(b) Internal Stresses.

In calculating the strength of reinforced concrete the following assumptions shall be used—

1. Calculations shall be made with reference to working stresses and safe loads.
2. A plane section before bending remains plane after bending.

3. The modulus of elasticity of concrete in compression within the limits of working stresses is constant.
4. The distribution of compressive stresses in girders, beams and slabs is rectilinear.
5. The common theory of flexure shall be applied to members resisting moment.
6. All tensile stresses shall be taken care of by steel reinforcement.
7. The concrete and reinforcement are perfectly bonded together. Under compressive stress the two materials are stressed in proportion to their moduli of elasticity.
8. The ratio of the modulus of elasticity of steel is the modulus of elasticity of concrete shall be taken as fifteen (15).
9. Initial stress in the reinforcement due to temperature changes may be neglected.

Interminate Systems of Design.

Sec. 3. No system of reinforced concrete shall be used which is not capable of design and investigation in accordance with the principles outlined in this code.

Design of Girders, Beams and Slabs.

Sec. 4. (a) For uniformly distributed loads the following rules shall be observed:

1. When supported at ends — "M" (at center) = $\frac{1}{8}$ W. L.
2. When continuous over two or more supports as in the case of intermediate spans — "M" (at center and supports) = $\frac{1}{12}$ W. L.
3. When continuous at one end and supported at the other as in the case of end spans — "M" (at center and supports) = $\frac{1}{10}$ W. L.
4. "M" is the bending moment; "W" is the total dead plus live load; "L" is the span length and shall be taken as the distance center to center of supports or may be assumed as the clear span plus the depth of the girder, beam or slab. Brackets

shall not be considered in reducing the clear span.

(b) In the case of concentrated or special loads the calculations shall be based on the critical condition of loading as for a span supported at ends. The moment thus determined may be reduced 10 per cent. for end spans and 20 per cent. for intermediate spans, provided the girders, beams and slabs are continuous for two or more spans.

(c) In the case of girders, beams or slabs, continuous for two or more spans, the main reinforcement bars or extra bars must extend sufficiently beyond the supports to take care of the negative moment.

(d) The unit tensile working stress for steel reinforcement shall not exceed 16,000 pounds per square inch, and the unit compressive working stress shall not exceed fifteen (15) times the unit compressive working stress in the concrete.

The unit compressive working stress in the concrete shall not exceed 700 pounds per square inch on the extreme fibre.

The unit bonding working stress between the concrete and reinforcement bars shall not exceed 80 pounds per square inch for rolled material and 40 pounds per square inch for cold drawn material such as wire.

(e) Shearing stresses in the concrete shall be provided on the basis of the following working units, and the effective cross section shall be taken as width of beam times distance from top of slab to center of gravity of steel in bottom flange.

1. For beams with horizontal bars only, 40 pounds per square inch.
2. For beams in which a part of the horizontal reinforcement is used in the form of bent up bars arranged with due respect to the shearing stresses, not more than 60 pounds per square inch.
3. For beams thoroughly reinforced for shear, not more than 120 pounds per square inch.
4. In calculating the web reinforcement to provide

the strength of 120 pounds per square inch the concrete may be counted upon as carrying one-third of the shear. The remainder is to be provided for by means of metal reinforcement consisting of bent bars and stirrups. Such reinforcement may be estimated on the assumption that the entire shear of a section less the amount assumed to be carried by the concrete is taken by the reinforcement in a length of beam equal to its depth. This steel shall be figured at a working stress of 16,000 pounds per square inch. The longitudinal spacing of stirrups or bent bars used to take care of the excess shear in the concrete shall not exceed three-quarters of the depth of the beam. Stirrups provided for other purposes may be spaced to suit the condition. Web reinforcement may consist of bent bars, or inclined or vertical bars attached to or looped about the horizontal reinforcement. When inclined members are used, the connection to the horizontal reinforcement shall be such as to insure against slip. Sufficient anchorage shall be provided above the neutral axis to develop the stirrup without exceeding the allowable stress. Horizontal reinforcement shall not be considered as web reinforcement.

(f) When steel is used in the compression flange of beams, the rods shall be tied in accordance with the requirements of vertical reinforced concrete columns with stirrups connecting with the tension rods of the beam.

(g) All reinforcing steel shall be accurately spaced and firmly held in the forms. It is to be inspected by the responsible party in charge before the concrete is poured. No steel shall be placed nearer the surface of the concrete than one (1) inch for girders and beams and one-half ($\frac{1}{2}$) inch, but not less than the diameter of the bar, for slabs. Longitudinal steel layed parallel shall be spaced not less than three (3) diameters and the minimum distance between bars shall not be less than $1\frac{1}{2}$ inches.

(h) In marking the size of girders and beams on plans, the width shall be given first and shall equal the gross width of the web, while the depth shall equal the gross distance from top of slab to bottom of web.

Shrinkage and Temperature Stresses.

Sec. 5. Shrinkage and temperature stresses are to be provided for by using steel rods of a combined area of not less than one-fourth of one per cent. of the gross area of the concrete section.

"T" Beams.

Sec. 6. In beams and slab construction, an effective bond shall be provided at the junction of slab and beam. When the principal slab reinforcement is parallel to the beam, transverse reinforcement shall be used extending over the beam and well into the slab. Where adequate bond between the slab and web of the beam is provided, the slab may be considered as an integral part of the beam, but its effective width shall be determined as follows:

- (a) It shall not exceed one-quarter ($\frac{1}{4}$) of the span length of the beam.
- (b) Its overhang width on either side of the web shall not exceed four (4) times the thickness of the slab.
- (c) When acting as a continuous beam due consideration shall be given to the tensile and compressive stresses at the supports.
- (d) No part of the slab shall be considered as a portion of the web unless the slab and web are cast at the same time.
- (e) Compressive steel shall be provided in the top flange in case the portion of slab acting with the web is inadequate to carry all the compression. The effective depth of "T" beams may be taken as the distance from the center of the slab to the center of gravity of the steel in the bottom flange. In such case, however, the stress in the concrete shall be taken as the average compressive

stress in the slab, and not the extreme fibre stress. The available cross section for shear shall be taken as the width of web times the distance from the top of the slab to the center of gravity of the steel in the bottom flange.

- (f) The same rules governing the design of girders, beams and slabs shall be used in the design of "T" beams.

Design of Floor Slabs With Two-way Reinforcement.

Sec. 7. Square and rectangular slabs reinforced in two directions at right angles to the supports shall be figured in accordance with the following rules:

- (a) Each system of reinforcement shall be figured independently and shall take a proportion of the dead plus live load as determined by the formula:

$$R = \frac{L^4}{L^4 + B^4}$$

in which "R" = proportion of the load carried by the shorter system. "L" = length, and "B" breadth of slab. For different ratio of $\frac{L}{B}$ the values of "R" as follows:

$\frac{L}{B}$	—	R
1.	—	0.5
1.1	—	0.59
1.2	—	0.67
1.3	—	0.75
1.4	—	0.80
1.5	—	0.83

Using these values each system of reinforcement is to be calculated in the same manner as specified for slabs with single systems of reinforcements. (See section 4.) The total amount of reinforcement thus determined may be reduced 25 per cent by gradually

increasing the rod spacing from the third point to the edge of the slab. No rods shall be spaced farther apart than 12 inches. If the length of the slab exceeds 1.5 times its width the entire load shall be assumed as carried by transverse reinforcements.

Girders supporting the slabs shall be calculated as simply supported for the proportion of the load specified above; such loads varying from zero at the support to a maximum at the center. The moments thus determined may be reduced in accordance with (b) of section 4.

Splicing of Reinforcing Bars for Girders, Beams and Slabs.

Sec. 8. All splicing bars for girders, beams and slabs shall be made over supports and the length of the splice shall be ample to develop the tensile or compressive stress of the bar at the allowable unit stress specified in (d) of section 4.

Flat Slab Construction.

Sec. 9. This method of construction is a type of reinforced concrete slab in which the dead and live loads are carried to the supports without the use of beams or girders.

The following rules shall be observed in the design of this class of work:

- (a) Symbols. "W" equals the total dead plus live load in one panel, "w" equals the total dead plus live load per sq. ft. of floor. "L" equals the direct distance center to center of columns for square panels, "Ll" equals the long direct distance and "Ls" equals the short distance center to center of columns for rectangular panels. "s" equals the clear distance between bands, plus the thickness of slab when two bands only are used.
- (b) Column Head. The column head shall not be less than .20 L in dimension and its profile shall not fall inside of a line drawn from this periphery at 45 degrees with the vertical. The column head shall be dropped below the under

side of slab at least three (3) inches at the periphery.

(c) Bending Moments.

1. Square Panels. For uniformly distributed loads the bending moment in a quadrant at the periphery of the column head shall be taken as WL

——. If the reinforcement bands extend direct-
35

ly and diagonally between columns, this moment shall be divided equally between one direct and one diagonal band. If the bands extend in direct lines only between columns, this moment shall be taken by one direct band. In the latter case the space enclosed by the two bands shall be calculated as a slab fixed on four sides. The moment for this slab shall be

$\frac{ws^3}{24}$ in each direction.

The total amount of steel required for such moment shall be used across supporting bands and two-thirds of this amount at mid span.

2. Rectangular Panels. The following method of calculation shall apply only for oblong panels in which the distance between centers of columns in one direction is not more than five-fourths times the distance between centers of columns in the other direction:

"N" equals number of main bands per panel.

"R" equals $\frac{L_l}{L_s}$

If N equals 2, the long band shall be assumed to carry a load equal to $\frac{RW}{2}$ and the short

band 1 — $\frac{R}{2}$ W.

If N equals 4, the long direct band shall be assumed to carry $\frac{RW}{4}$; the short direct band

$1 - \frac{R}{2} - \frac{W}{2}$; and each diagonal band one-half the sum of that carried by the two direct bands. For uniformly distributed loads, the bending moment in a quadrant at the periphery of the column head shall be taken as $\frac{1}{35} W \frac{(Ll + Ls)}{2}$

which is to be divided between the different bands. (See square panel) in the ratio above specified.

If N equals two, the oblong space enclosed by the two bands shall be calculated as a slab fixed on four sides similar to that outlined for square panels and in accordance with Section 7 of this code.

3. Wall Panels. In end or wall panels the reinforcement bands shall be designed to resist a moment dependent upon the actual end condition of the bands. In case the bands terminate on columns as for exterior columns, the moment shall be increased 20% of that allowed for bands continuous over columns. When exterior columns are set in from the building line an allowance shall be made for actual end conditions.
4. The bending moments in the center of the spans of the reinforcing bands shall be assumed the same as those determined at the periphery of the column head.
5. For concentrated or special loads, calculations shall be made based upon the critical condition of loading.
- (d) Steel Reinforcement. The reinforcement shall be such as to adequately reinforce all regions of tension and such regions of compression and

shear as may be necessary. Steel calculated to resist tension and compression shall be placed as near the surface as proper fireproofing and construction will permit, and in determining its moment of resistance the actual effective depth of the bars considered shall be used. The width of each main reinforcing band passing

over the column head shall not exceed $\frac{7}{16}$ L.

The percentage of steel in a single band of bars when 4 bands per panel are used, shall not exceed $\frac{1}{2}$ of one per cent. and when 2 bands per panel are used, shall not exceed one per cent. of the effective cross sectional area of the slab having a width equal to that of band. All reinforcing steel shall be imbedded for a sufficient distance beyond the points of critical stress to develop the designed stress in bond.

- (e) Compression in Concrete. The concrete in compression at the column head shall be designed to resist the bending moment existing in a quadrant of the periphery of the column head. The available width of the slab to resist this moment shall be taken as the width of one reinforcing band plus four times the thickness of the slab.
- (f) Shear in Concrete. The vertical shear on any section around the column shall not exceed 80 lbs. per square inch. The additional shear shall be resisted by shear reinforcement.
- (g) Slab Thickness. The slab thickness shall not be less than $\frac{1}{30}$ L for floors and $\frac{1}{40}$ L for roofs, but in no case shall the floor slab be less than 7 inches thick or the roof slab be less than 6 inches thick.

Reinforced Hollow Tile Floor Construction.

Sec. 10. While tile is used in conjunction with rein-

forced concrete, it shall not be considered as adding any strength to the floor. The reinforced concrete shall be calculated the same as outlined under section 4 for girders, beams and slabs. The clear distance between the tiles shall not be less than four (4) inches. Before pouring the concrete the tiles shall be thoroughly soaked with water. All tile is to be of uniform quality and so formed as to give a first class bond for the concrete. Any other fire resisting material may be used in place of tile.

Special Types of Floor Construction.

Sec. 11. All special types of floor construction involving reinforced concrete and not mentioned herein shall be so made that all parts of the steel reinforcement shall be covered with concrete as specified for girders, beams and slabs, and shall be designed in accordance with the principles outlined in this code. Types of reinforcement, designed to eliminate form work and providing a closely meshed surface similar to a metal lath for adequate bond of plaster to the body of the concrete, will be considered as coming within the provisions of this code, if plastered with a cement mortar made of one (1) part cement, two (2) parts sand, and $\frac{1}{20}$ part lime. Such plaster must not be less than one-half ($\frac{1}{2}$) inch thick below the body of the reinforcement, and is to be applied when the body of the concrete is still moist, so as to produce a perfect bond.

Footings for Columns and Walls.

Sec. 12. Footings for columns and walls in which reinforcing steel is used to resist stresses shall be designed in conformity with the rules outlined in section 4.

Reinforced Concrete Columns.

Sec. 13. Reinforced concrete columns shall not exceed in length fifteen (15) times the least side or diameter. In no case shall the gross cross section of the column be less than 64 square inches. Columns may be reinforced by means of longitudinal bars, by bands or hoops, or by structural steel members, which in themselves are sufficiently rigid to act as columns. The following unit working stresses and rules shall be used in

calculating the different types of reinforced columns.

- (a) 500 pounds per square inch on net core area for columns with longitudinal reinforcement only.
- (b) 600 pounds per square inch on net core area for columns with reinforcement of bands and hoop-ing only. Such reinforcement shall comprise not less than 1 per cent. of the volume of the core.
- (c) 800 pounds per square inch on net core area for columns with longitudinal bars and spiral hoop-ing. The area of the longitudinal bars shall not be less than 1 per cent. nor more than 6 per cent. of the core area of the columns. The volume of the hooping shall not be less than 1 per cent. of the volume of the core. This unit applies to concrete made of one part cement, two parts sand and four parts stone.
- (d) 900 pounds per square inch on net core area for same type of columns as specified in (c) of this section. This unit applies to concrete made of (1) part cement, $1\frac{1}{2}$ parts sand and three parts stone.
- (e) 600 pounds per square inch on net core area for column with rigid structural steel members. Spiral hooping or bands shall be used outside of the steel members, and shall be spaced not more than three inch centers and there shall be not less than one inch space between the spiral and the structural steel members. The unit compressive working stress in the structural steel members shall be taken as 17100—57 —

L
R

for lengths over 90 radii and 12,000 pounds per square inch for length of 90 radii or under.
“L” equals length of member in inches.
“R” equals least radius of gyration.
- (f) Whenever spiral hooping or bands are used they shall not be spaced more than 3 inch centers, and shall not be less than one-fourth inch round

or equivalent area. Where longitudinal rods only are specified, hoops or bands of three-eighths inch round or equivalent must be provided and must be spaced not more than twelve inch centers. Where hooping only is specified, longitudinal bars comprising not less than three-quarters of one per cent. of the core area must be provided. In all cases the hooping must be thoroughly fastened to the longitudinal rods. The hoops, bands, or spirals shall not be considered in calculating the strength of the column. No part of the concrete outside of the hooping shall be considered as a part of the effective column. Not less than $1\frac{1}{2}$ inches of concrete shall be used outside of the hooping.

- (g) The unit working stress in the longitudinal steel shall be taken as fifteen (15) times the unit working stress for the concrete. Not less than four (4) one-half ($\frac{1}{2}$) inch round rods shall be used for the longitudinal reinforcement.

Column Splices.

Sec. 14. Column splices shall be made to properly transmit the stresses in the steel reinforcement. The connection shall be made by mechanical means or by lapping the rods. The latter method shall not be used when the area of the longitudinal bars exceed $1\frac{1}{4}$ square inches per bar. When rods are lapped they are to be securely wired to each other. All splices shall be made above floor levels, but the center of the splices shall be not more than 12 inches above the finished floor line.

When the reinforcement bars are lapped at the splice, the length of the lap splice shall not be less than twenty times the diameter of the lower bars. When separate bars are used to splice two columns the area of the bars shall be equal to the area of the bars in the lower column and shall not be less in length than forty (40) times the diameter of the lower bars.

Curtain Walls.

Sec. 15.

- (a) Concrete curtain walls shall be not less than six

- (6) inches thick and shall have steel reinforcement of not less than one-fourth of one per cent. of the cross section of the wall spaced equally both vertically and horizontally. The bars are to be spaced not more than 12 inch centers and are to be wired together at all points of intersection, all bars are to be sufficiently lapped to develop their stress. Additional bars shall be placed around openings, proportionate to the requirement of each case, all properly wired and bonded to develop maximum strength.
- (b) Curtain walls made of cement mortar plaster and reinforcement bars with expanded metal lath or similar material, shall not be less than $2\frac{1}{2}$ inches in thickness. This plaster shall consist of one (1) part cement, two (2) parts sand and not more than $\frac{1}{20}$ part of lime.

General Requirements.

Sec. 15a. The design of all reinforced concrete construction, unless otherwise noted herein shall conform with the requirements specified in section 4 of this code.

Concrete Mixture.

Sec. 16.

- (a) The concrete beams, girders, slabs, columns, walls, etc., unless otherwise specified in this code, shall be made in the proportions by volume of one part cement, two (2) parts sand and four (4) parts broken stone, gravel or slag. In case test blocks of such concrete fail to develop an ultimate crushing strength of 2,000 pounds per square inch after hardening 28 days, the mixture shall be so altered as to obtain such a result.

The special concrete for columns (see (d) of section 13) shall be mixed in the proportion by volume of one (1) part cement, $1\frac{1}{2}$ parts sand, and three (3) parts broken stone, gravel or slag. Test blocks made of such concrete shall develop an ultimate crushing strength of 2,400

pounds per square inch after hardening 28 days, or the mixture shall be so altered as to obtain such a result.

- (b) All mixing shall be done by machine except where limited quantities and conditions of work may necessitate hand mixing. Such mixing shall, however, be done only when approved by the Inspector of Buildings. In all mixing the separate ingredients shall be measured and sufficient clean water shall be added to make a plastic concrete of such consistency as to readily flow around the steel reinforcement.
- (c) Test blocks shall be moulded from the concrete at the expense of the contractor at any time and of such size as the Inspector of Buildings may direct. These blocks shall be held for the disposal of the Department of Buildings.

Materials.

Sec. 17.

(a) Cement. All cement shall be the grade known as Portland Cement. It shall be properly tested and the Inspector of Buildings may at any time demand that certified copies of all test records be submitted for examination.

Cement shall be delivered at the building site in original packages with the brand and name of the manufacturer plainly marked thereon.

A bag of cement shall contain 94 lbs. of cement net. Each barrel of cement shall contain (4) bags.

Cement after delivered on the premises shall be properly protected against damage of any kind. Cement failing in seven (7) day requirements may be held awaiting the result of the twenty-eight (28) day tests before rejection.

All tests shall be made in accordance with the best engineering practice.

The acceptance or rejection shall be based on the following requirements:

1. Specific Gravity. The specific gravity shall not be less than 3.1. Should the test of cement as received fall below this requirement a second test

may be made upon a sample ignited at red heat. The loss in weight of the ignited cement shall not exceed 4 per cent.

2. Fineness. It shall leave by weight a residue of not more than 8 per cent. on a No. 100 sieve, and not more than 25 per cent. on a No. 200 sieve.
3. Time of setting. It shall not develop initial set in less than thirty (30) minutes, and must develop hard set in not less than one (1) hour, nor more than ten (10) hours.
4. Tensile Strength. The minimum requirements for tensile strength for briquettes one square inch in cross section shall be as follows, and the cement shall show no retrogression in strength within the periods specified.

Neat Cement.

	Lbs.
24 hours, in moist air.....	175
7 days (1 day in moist air, 6 days in water).....	500
28 days (1 day in moist air, 27 days in water).....	600
One Part Cement, Three Parts Standard Ottawa Sand.	

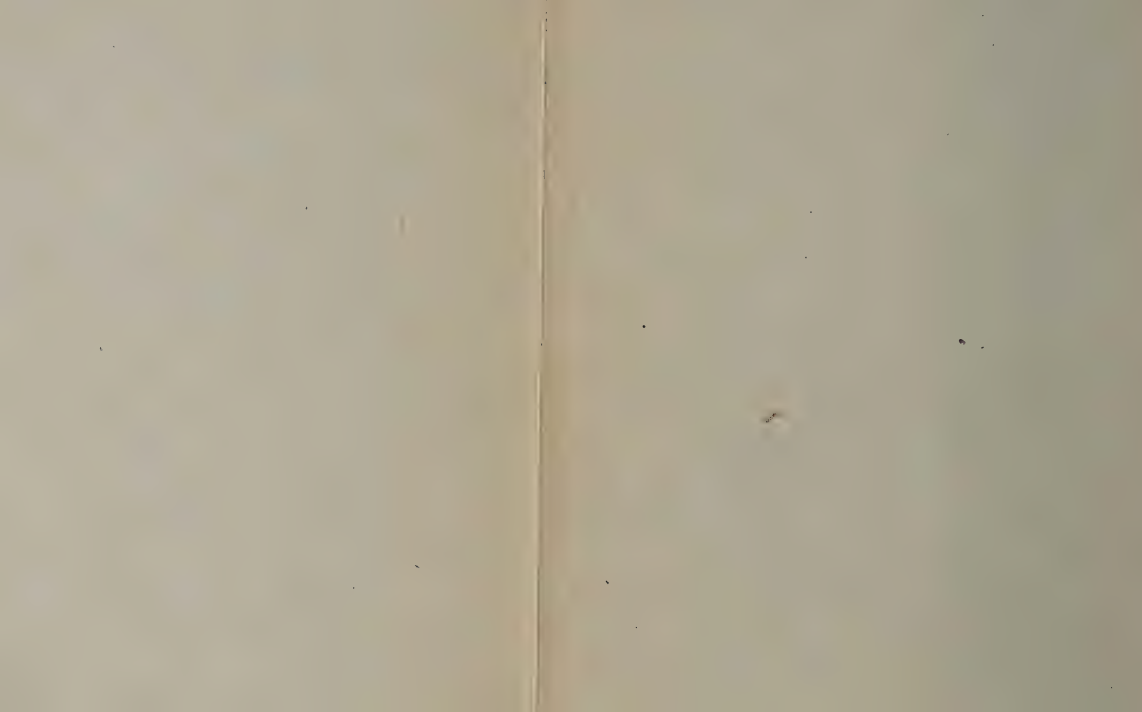
	Lbs.
7 days (1 day in moist air, 6 days in water).....	200
28 days (1 day in moist air, 27 days in water).....	275

5. Constancy of Volume. Pats of neat cement about three (3) inches in diameter, one-half ($\frac{1}{2}$) inch thick at the center, and tapering to a thin edge, shall be kept in moist air for a period of twenty-four (24) hours. A pat is then kept in air at a normal temperature and observed at intervals for at least twenty-eight (28) days. A third pat is exposed in any convenient way in an atmosphere of steam, above boiling water, in a loosely closed vessel for five (5) hours. These pats, to satisfactorily pass the requirements, shall remain firm and hard, and show no signs of distorting, checking, cracking or disintegrating.
6. Sulphuric Acid and Magnesia. The cement shall not contain more than 1.75 per cent. of anhydrous sulphuric acid (SO_3), nor more than 4 per cent. of magnesia (MgO).

CHEMICAL AND PHYSICAL PROPERTIES—See section [d] page 41 “Steel Reinforcement”

INSERT I.

Properties Considered	Structural	Steel Grade		Hard Grade		Cold
	Plain Bars	Deformed Bars	Plain Bars	Deformed Bars	Twisted Bars	
Phosphorus, Maximum—						
Bessemer	.10	.10	.10	.10	.10	
Open Hearth	.06	.06	.06	.06	.06	
Ultimate tensile strength, pounds per square inch	55/70000	55/70000	80,000 min.	80,000 min.		Recorded only
Yield Point, minimum pounds per square inch	33,000	33,000	50,000	50,000	55,000	
Elongation, per cent. in 8 inches minimum	1,400,000 T. S.	250,000 T. S.	1,200,000 T. S.	1,000,000 T. S.	5%	
Cold bend without fracture; bars under $\frac{3}{4}$ inches in diameter or thick- ness	180°d.=1t	180°d.=1t	180°d.=3t	180°d.=3t	180°d.=2t	
Bars $\frac{3}{4}$ inches in diameter or thick- ness and over	180°d.=1t	180°d.=2t	180°d.=3t	180°d.=4t	180°d.=3t	



- (b) Sand. The sand shall be clean and well graded passing through a $\frac{1}{4}$ inch mesh screen and not less than 40 per cent. shall be retained on a No. 40 sieve. It shall be free from organic matter and contain not more than 5 per cent. of clay or loam. Stone screenings may be used in place of sand except for surface subject to abrasion.
- (c) Stone, Gravel, Slag. The stone shall be clean, hard, crushed stone, free from dirt, dust and flat chips. The gravel shall be free from organic matter and contain not more than $\frac{1}{30}$ part of clay or loam. The slag must be approved by the Inspector of Buildings and shall be clean, crushed, blast furnace slag. All aggregate must be of such size as will pass through a one inch screen and be retained on a $\frac{1}{4}$ inch mesh screen.
- (d) Steel Reinforcement. All steel used for reinforcement shall be made by either the open hearth or Bessemer process, and shall be rolled from new billet stock. No re-rolled material will be permitted. The chemical and physical properties shall conform to the following limits.
7. Chemical Determination. The chemical test shall be made from a test ingot taken at the time of the pouring of each melt or blow of steel.
8. Test Specimens. Test pieces may be cut from the bars as rolled. In the case of deformed bars, the test pieces may be planed or turned for a length of at least nine (9) inches if deemed necessary to obtain uniform cross section. For cold twisted bars, the test pieces shall be cut from the bars after twisting, and shall be tested without further treatment. In case it is desired and the testing and acceptance for cold twisted bars be made upon the hot rolled bars before being twisted the hot rolled bars shall meet the requirements of the structural steel grade for plain bars in this code.

9. Number of Tests. At least one test of each kind shall be made from each melt of open hearth steel rolled, and from each blow or lot of ten tons of Bessemer steel rolled. In case bars differing $\frac{3}{8}$ inch and more in diameter or thickness are rolled from one melt or blow, a test shall be made from the thickest and thinnest material rolled.
10. Modification in Elongation for Thin and Thick Material. For bars less than $\frac{7}{16}$ inch and more than $\frac{3}{4}$ inch nominal diameter or thickness, the following modifications shall be made in the requirements for elongation:
 - (a) For each increase of $\frac{1}{8}$ inch in diameter or thickness above $\frac{3}{4}$ inch, a deduction of one (1) shall be made from the specified percentage of elongation.
 - (b) For each decrease of $\frac{1}{16}$ inch in diameter or thickness below $\frac{7}{16}$ inch a deduction of one (1) shall be made from the specified percentage of elongation.
 - (c) The above modifications in elongation shall not apply to cold-twisted bars.
11. Test Copies. Certified copies of test shall be furnished at the request of the Inspector of Buildings.
12. Cold-twisted Bars. Bars shall be twisted cold with one complete turn in a length equal to no more than twelve (12) times the thickness of the bar.
13. Variation in Weight. Bars for reinforcement shall be subject to rejection of the actual weight if any lot varies more than 5 per cent over or under the theoretical weight of that lot.
14. Finish. Material must be free from injurious seams, flaws or cracks and have a workmanlike finish.

The material shall not be painted or oiled, unless specially permitted by the Inspector of

Buildings, and it shall be free from all mill scale and loose rust when in position.

Centering and Forms.

Sec. 18. All forms shall be built in a substantial manner, plumb and true and sufficiently tight to prevent the loss of cement mortar. They shall be braced and tied together so that the pressure of the concrete or external loads will not throw them out of line. Temporary clean-out holes shall be provided at the foot of all column and wall forms, and such forms shall be thoroughly cleaned before any concrete is deposited. Before removing any shores under any beam or girder, the column supporting the same shall be stripped so that a complete inspection can be made of the column. Column forms shall not be removed in less than two (2) days after the pouring. Ample shores shall be used to carry the full weight of the loads. The sides of the girder and beam forms shall not be removed in less time than six (6) days after pouring. The supports under floor slabs shall not be removed in less time than ten days after pouring; but the removal of forms for flat slab construction shall be the same as for supports under beams and girders. The joists and lagging may, however, be removed in less time provided the slabs are kept properly shored.

The time which shall elapse before removing the shores under beams and girders varies with the design of the structure and condition of the weather. In no case shall they be removed in less than three weeks after pouring, and the beams and girders shall then carry only their own weight. Where construction or other loads are imposed, sufficient shoring shall be left in place to carry these loads until the completion of the work. If any unfavorable conditions of construction or weather should, in the judgment of the Inspector of Buildings, make necessary the retention of the forms and supports of the various members of the building for a longer period than that specified, the time for the removal of such forms or supports shall be determined by the Inspector of Buildings.

Placing Concrete.

Sec. 19. All concrete shall be placed immediately after mixing, and shall be thoroughly puddled and worked in the forms when it is being poured. No concrete shall be used that has partially set before placing. Filling the forms completely and puddled afterward will not be permitted. Care should be taken not to subject partly set concrete to any impact effect due to carting or handling of material. No concrete is to be placed under water unless the working conditions are such as to make it absolutely necessary. In such case special precaution should be taken to prevent the separation of the cement from the aggregate.

In starting any period of work, the concrete previously poured should be thoroughly cleaned, drenched and slushed with mortar consisting of one (1) part cement and not more than two (2) parts of sand.

When it is impracticable to pour an entire structure in one continuous operation, the work shall be so executed as to bring the joints at the following points:

- (a) For columns—at the lower side of the girders.
- (b) For girders—at a point midway between the supports, unless a beam intersects the girder at such point, in which case the joint should be offset a distance equal to twice the width of the beam.
- (c) For slabs or beams—at or near the center of the span.
- (d) Girders, beams and slabs shall not be constructed over freshly poured columns until a sufficient period has elapsed to provide for settlement in columns.
- (e) When beams are designed as "T" beams, the slab shall be poured at the same time as the web.

Concrete Placed in Freezing Weather.

Sec. 20. All material for concrete placed in freezing weather must be heated to completely eliminate all ice and frost in the material and provisions must be made to properly protect the concrete after being placed.

All reinforced concrete shall be kept at a temperature above freezing for at least 48 hours after being put in place.

Salt or similar substances may be used in addition to the heating of the material, provided they are dissolved before adding to the mixture, and do not exceed in amount 3 per cent. of the water required for mixing.

Concrete Placed in Hot Weather.

Sec. 21. Concrete layed in hot weather shall be kept thoroughly wet during the first week after placing.

Cement Finish.

Sec. 22. Cement finish added to the top of slabs, beams or girders, shall not be considered in calculating the strength of a member.

Sec. 23. Fire Proofing. Reinforced concrete constructed in accordance with the rules of this code shall be considered as fire-proofing.

Tests.

Sec. 24. All reinforced concrete construction shall be performed under the personal and constant supervision of a competent superintendent, and shall be tested by applying a load up to twice the figured live load to such parts of the structure and at such times as the Inspector of Buildings may select. The floors shall sustain the test load for at least 24 hours without showing cracks or other evidence of failure.

PLAIN CONCRETE.

Definition.

Sec. 25. Plain concrete is concrete containing no steel reinforcement within its mass.

Mixture.

Sec. 26.

(a) Plain concrete shall consist of cement, sand, stone, gravel, slag and cinders, fulfilling the following requirements:

1. The cement, sand, stone, gravel or slag shall meet the requirement specified for the same material in reinforced concrete, which

forms a part of this code, with the exception that the stone, gravel and slag may be of a size, which will pass through a 3-inch ring and be retained on a $\frac{1}{4}$ -inch mesh screen.

2. The cinders shall be a clean, hard, vitreous clinker, free from sulphides, unburned coal or ashes, and shall pass through a 3-inch ring and be retained on a $\frac{1}{4}$ -inch mesh screen.
- (b) The mixing, placing and finishing of plain concrete shall be done the same as specified for reinforced concrete.
- (c) Concrete consisting of cement, sand and cinders shall only be used for fire-proofing and filling purposes.
- (d) No concrete shall be used which contains less than one part cement to nine (9) parts of aggregate.

Working Stresses.

Sec. 27. The following unit working stresses shall be used:

Mixture of concrete,			Com-		Tension
Cement, sand,			pression	Shear	(due to
Stone, etc.			per sq. in.	per sq. in.	flexure)
					per sq. in.
1	2	4	400 lbs.	40 lbs.	35 lbs.
1	2½	5	300 lbs.	35 lbs.	30 lbs.
1	3	6	250 lbs.	30 lbs.	25 lbs.

Sec. 28. Footings, piers, foundation walls, curtain walls, retaining walls, floors on a subgrade, etc.

- (a) Footings shall have a thickness not less than six (6) inches and a projection not greater than that determined by the allowable working stresses herein specified.
- (b) Piers shall not be less than 8 inches square, and shall not exceed in height eight (8) times the least dimension.
- (c) Foundation walls with lateral support at top shall

have a thickness not less than 10 inches, and a height not greater than ten (10) times the thickness.

- (d) Retaining walls without lateral support at top shall have a thickness at every point of not less than $\frac{1}{3}$ (one-third) of the height of the wall above such point. The top of the wall shall not be less than 12 inches in thickness.
- (e) Curtain walls shall have a thickness not less than nine (9) inches, and a height not greater than fifteen (15) times the thickness. The length of curtain walls shall not exceed thirty (30) feet.
- (f) Floors on a subgrade shall not be less than four (4) inches thick, the top inch consisting of a finish coat of one part cement and two parts sand, placed integrally with the body of the concrete.

Forms.

Sec. 29. Forms shall be constructed, cleaned and removed in accordance with the rules specified for reinforced concrete in this code. Forms for curtain walls and other classes of work which carry their own weight only, may be removed two (2) days after pouring. Where construction loads are imposed or weather conditions require it, sufficient shoring shall be left in place to carry the loads until the Building Inspector directs the removal thereof.

Test and Inspections.

Sec. 30. All tests and inspection of work shall be subject to the same requirements specified for reinforced concrete.

Sec. 31. Any person, firm or corporation or agent violating any of the provisions of this ordinance or any firm or corporation or agent assisting in the commission of any violation of any of the requirements thereof, or any person, firm or corporation, or agent who shall neglect to do each and every act required herein, whether such act shall have been approved by the Inspector of Buildings or not, shall for each and every day's violation or non-compliance be liable to a

fine of not less than five (5) dollars nor more than five hundred (500) dollars or in default of fine by imprisonment in the House of Correction of Milwaukee County of not less than one day nor more than six months.

Sec. 32. All ordinances or parts of ordinances contravening the provisions of this ordinance are hereby repealed.

Sec. 33. This ordinance shall take effect and be in force from and after twenty days following its passage and publication.

Passed August 4, 1913.

File Number 4663.

97—AN ORDINANCE

Regulating Steel and Iron Construction. (Page 13.)

The Mayor and Common Council of the City of Milwaukee do ordain as follows:

Section 1. **Steel:**

(1) The chemical and physical properties shall conform to the following requirements:

Properties.	Structural Steel.	Rivet Steel.	Cast Steel.
Phosphorus (max.)	0.06%	0.04%	0.05%
Sulphur (max.)	0.06%	0.04%	0.06%
Ultimate tensile strength in pounds per square in.	60/70000	48/58000	67000 (minimum)
Yield point, minimum in pounds per square in.	½ the ultimate tensile strength		
Coefficient of elas- ticity	29,000,000	29,000,000	29,000,000
Elongation, min'm.	20% in 8 in.	26% in 8 in.	18% in 2 in.
Cold bends, without frac- tures—			
Bars under 1" thick.	180° Flat	180° Flat	90° d=t
Bars 1" thick and over. . . .	180° d=t	180° d=t	90° d=2t

(2) **Chemical Analysis.** To determine the chemical properties an analysis shall be made from a test ingot

taken during the pouring of each melt or blow of steel. Drillings for analysis shall be taken not less than $\frac{1}{4}$ inch beneath the surface of the test ingot.

(3) Test Specimens.

(a) For structural plates, shapes and bars, the specimens are to be made by cutting coupons from the finished product.

(b) For rivets they are to be cut from the rolled product.

(c) For castings they are to be made from coupons cast on one or more castings from each melt: In case this is impractical, separate test bars shall be cast to represent each melt. All test bars shall be annealed with the castings they represent.

(4) **Number of Tests.** At least one test of each kind shall be made from each melt. In case steel differing $\frac{3}{8}$ inch and more in thickness is rolled from the same melt, a test shall be made from the thickest and thinnest material rolled.

(5) **Modifications in Elongation.** For material less than $\frac{7}{16}$ in. and not more than $\frac{3}{4}$ in. in thickness, the following modifications shall be made in the requirements for elongation:

(a) For each increase of $\frac{1}{8}$ inch in thickness above $\frac{3}{4}$ inch, a deduction of one (1) shall be made from the specified percentage of elongation.

(b) For each decrease of $\frac{1}{16}$ inch in thickness below $\frac{7}{16}$ inch, a deduction of one (1) shall be made from the specified percentage of elongation.

Sec. 2. Iron.

(1) **Iron Castings.** Except where chilled iron is specified, castings shall be made of tough gray iron with sulphur not over 0.10 per cent. Sample pieces one inch (1") square, cast from the same heat of metal in sand molds, shall be capable of sustaining a clear span of twelve (12) inches, a central load of 2,400 pounds when tested in the rough bar. A blow from a hammer shall produce an indentation on a rectangular edge of the casting without flaking the metal.

(2) **Wrought Iron.** Wrought iron shall be double rolled, tough, fibrous and uniform in character. Test specimens shall develop an ultimate strength of at least

50,000 pounds per square inch, an elongation of at least 18% in 8 inches, with fracture wholly fibrous, and shall bend cold with the fibre through 135 degrees without sign of fracture around a pin the diameter of which is not over twice the thickness of the piece tested. When nicked and bent the fracture shall show at least 90% fibrous.

Sec. 3. Variation in Weight.

A variation of cross section or weight in the finished members of $2\frac{1}{2}\%$ from the specified size shall be cause for rejection.

Sec. 4. Test Copies.

Certified copies of tests shall be furnished at the request of the Inspector of Buildings.

Sec. 5. Finish.

Material must be free from defects that will impair its strength or fitness for the purpose intended and must have a workmanlike finish.

Sec. 6. Rolled Material.

All rolled material must be made from new billet stock. No second-hand rolled shapes shall be used without the written permission of the Inspector of Buildings.

Sec. 7. Working Stresses.

(a) All parts shall be proportioned to conform with the following unit working stresses, unless otherwise hereinafter specified:

(b) The allowable unit compressive stresses per square inch shall be determined by the following formulae:

Steel	17,100 — 57	L — R L
Wrought Iron	12,000 — 60	L — R L
Cast Iron	10,000 — 60	L — R

In the above formula:

L—Equals length in inches.

R—Equals least radius of gyration in inches.

	Rolled Steel.	Cast Steel.	Wrought Iron.	Cast Iron.
Tension on net section.....	16,000	16,000	12,000	.....
Maximum compression on gross section.....	12,000	12,000	10,000	8,000
Bending on extreme fibre (tension and compression)	16,000	16,000	12,000	.....
Bending on extreme fibre (tension).....	.....	.....	.....	3,000
Bending on extreme fibres of pins.....	25,000	.....	.....	.....
Bending on extreme fibre compression.....	.....	.....	.....	10,000
Shear: Pins and power driven rivets.....	10,000	.....	.....	.....
Shear: Hand driven rivets.....	8,000	.....	.....	.....
Shear: Machine bolts.....	7,000	.....	.....	.....
Shear: On rolled steel shapes.....	12,000	.....	.....	.....
Shear: Plate girder webs, net section.....	10,000	.....	.....	.....
Shear on brackets.....	.....	.....	.....	2,000
Bearing: Pins and power driven rivets.....	20,000	.....	.....	.....
Bearing: Hand driven rivets.....	16,000	.....	.....	.....
Bearing: Machine bolts.....	14,000	.....	.....	.....

In no case, except for wind stresses (see Section 12) shall the unit compressive stress exceed the values specified in paragraph (a), Section 7.

Sec. 8. Alternate Stresses.

All members and their connections subject to alternate stresses of tension and compression shall be proportioned for each kind of stress. Both of the stresses shall, however, be considered as increased by an amount equal to $\frac{8}{10}$ of the least of the two stresses for determining the sectional areas by the allowed unit working stresses.

Sec. 9. Combined Stresses.

Members subject to both axial and bending stresses shall be proportioned so that the combined fibre stresses will not exceed the allowed unit working stresses.

Sec. 10. Impact.

Beams, girders, trusses, columns and their connections carrying traveling cranes or similar loads shall be proportioned for stresses 25% greater than the computed stresses produced by such loads.

Sec. 11. Eccentric Stresses.

Provision must be made for eccentric loading on columns and other members.

Sec. 12. Wind Stresses.

Wind stresses figured in members on the assumption of 30 lbs. pressure per square foot of exposed surface need not be considered except as follows:

(a) When the wind stress exceeds 30% of the maximum combined stress due to dead and live loads. The section of the member shall then be increased until the load stress per square inch will not exceed by more than 30% the maximum fixed for dead and live loads only.

(b) When the wind forces alone or in combination with other forces can neutralize or reverse the stresses in any member.

(c) Members and their connections subject to wind pressure only may be proportioned by using unit stresses 20% in excess of those specified herein.

Sec. 12a. Temperature.

Provision shall be made for temperature stresses

covering a range of 150 degrees F.

Sec. 13. Cast Iron Columns.

Cast iron columns shall conform to the following requirements:

(a) The metal shall not be less in thickness than $\frac{1}{12}$ of the greatest outside dimension of cross section, but in no case shall the thickness be less than $\frac{3}{4}$ of an inch. Metal for brackets, lugs and flanges shall have a minimum thickness of $\frac{5}{8}$ of an inch.

(b) The outside dimension of cross section shall not be less than 5 inches.

(c) The unsupported length shall not exceed twenty-five times the least outside dimension of cross section.

(d) All holes for the attachment of members shall not exceed the diameter of the bolts by more than $\frac{1}{8}$ of an inch.

(e) The bearing ends of all columns shall be machined to a true surface at right angles to the axis of the column.

(f) Columns shall bear on each other to properly transmit their loads, and shall be bolted together through their flanges with not less than four $\frac{3}{4}$ inch bolts.

Sec. 14. Cast Iron Bases.

Cast iron bases shall be proportioned to transmit their loads to the foundations. No part of the base shall be less than $\frac{3}{4}$ of an inch in thickness. They must be machined top and bottom to a true surface at right angles to the vertical axis. In case they rest on masonry or concrete and are properly grouted with Portland cement mortar or a composition equally as good, the bottom surface need not be machined. Such surface must, however, be a practically true plane. Holes must be provided in the bases to permit the grouting to be properly executed to insure a full bearing of the casting.

Sec. 15. Cast Iron Lintels.

Cast iron lintels shall not be less than $\frac{3}{4}$ of an inch thick at any section, and shall not be used for spans exceeding 6 feet.

Sec. 16. Compression Members other than Cast Iron.

No compression member shall have a length exceeding 120 times its least radius of gyration, except in cases of stiffening struts, wind and lateral bracing, when the length may be increased to 140 times the least radius of gyration.

The thickness of web plates in built-up members shall not be less than $\frac{1}{35}$ of the distance between the rivets connecting them to the angles. The thickness of cover plates shall not be less than $\frac{1}{40}$ of the distance between the rivets connecting them to the angles. The open sides of compression members shall be stayed with diagonal lattice and with tie plates as near each end as practicable and at intermediate points where the lattice is interrupted. The tie plates shall have a length not less than the greatest width of the member and a thickness not less than $\frac{1}{50}$ of the distance between center lines of the connecting rivets.

Single lattice bars shall have an inclination of approximately 60 degrees with the axis of the member and shall have a minimum thickness of $\frac{1}{40}$ of the distance between rivets connecting them to the member. Single lattice bars may be connected with one rivet. Lattice angles shall be connected with at least two rivets.

Double lattice bars shall be used where the distance between rivet lines in the flanges exceeds 15 inches. They shall have a minimum thickness of $\frac{1}{60}$ of the distance between the rivets connecting them to the member, shall have an inclination of approximately 45 degrees, and shall be riveted at their intersections.

Lattice bars shall not be less in width than $1\frac{3}{4}$ inches for members 6 inches in width, 2 inches for members 9 inches in width, $2\frac{1}{4}$ inches for members 12 inches in width, and $2\frac{1}{2}$ inches for members 15 inches and over in width. Compression members unless proportioned at the connections for the entire stress, shall have their ends machined to a true surface perpendicular to the axis to insure a perfect bearing. The connections between members shall be made with splice plates extending not less than 12 inches each side of the joints.

Sec. 17. Tension Members.

In calculating the net area of tension members the area of rivet holes must be deducted, assuming the diameter of the hole $\frac{1}{8}$ inch larger than the nominal size of the rivet.

Pin connected riveted tension members shall have a net section through the pin hole 25% in excess of that through the body of the member. The minimum net section back of the pin hole, parallel to the axis of the member, shall not be less than through the body of the member.

All eye bars shall be solid forged steel bars. The thickness of head and neck shall not vary more than $\frac{1}{16}$ of an inch from that specified. All bars shall be annealed after forging. The heads of the bars shall be so proportioned that the bar will break in the body instead of in the eye. Upset screw ends may be used on bars if proportioned so that the area at base of thread and at all parts of upset ends is 15% in excess of the area of the bar.

Clevises, turnbuckles, and sleeve nuts must be so proportioned as to develop the stress in the bars which they connect.

Sec. 18. Plate Girders.

Plate girders shall be designed either by the moment of inertia of their net section or by assuming that the flange areas are concentrated at their centers of gravity, in which case $\frac{1}{8}$ of the net section of the web, if properly spliced, may be used as flange section. If cover plates are used as a part of the flange, their combined net area shall not exceed 50% of the total net area of flange. The compression flanges shall be made of same gross section as the tension flanges. In case the unsupported length of the compression flange exceeds 20 times the width, the flange shall be proportioned as a compression member. The web shall be designed for the total maximum shear, assuming this to be uniformly distributed over its net area.

Web splices shall be proportioned to resist the maximum shearing stresses and in case $\frac{1}{8}$ of the web has been used as flange area, provision shall be made for the transmission of the stress to the flange.

The webs of plate girders must be stiffened at intervals not exceeding the depth of the girders or a maximum of 5 feet, whenever the shearing stress per square inch exceeds the stress allowed by the following formula:

Allowed shearing stress = $12500 - 90 H$; where H = ratio of depth of web between flanges to its thickness; but no web plates shall be less than $\frac{1}{4}$ inch thick.

Stiffeners must be provided at all points of bearing and concentrated loading. They must be fitted to bear on the flange angles and enough rivets must be provided to properly transfer the stresses. Their area must be determined by the working stresses given for compression.

Sec. 19. Rolled Beams.

Rolled shapes used as beams shall be designed on the basis of their moment of inertia for maximum bending. The compression flange shall be secured against buckling if its length exceeds 20 times its width. When two or more rolled shapes are used as a compound beam or girder, they shall be connected together with bolts and iron or steel separators at intervals of not more than 5 feet.

All beams 12 inches and over in depth shall have at least two (2) bolts to each separator.

Sec. 20. Trusses.

In the design of trusses only such forms shall be used which are possible of analysis.

Sec. 21. Anchorage and Wall Bearing Plates.

Beams or girders supported by a wall, shall be properly anchored thereto and be provided with bearing plates proportioned to distribute the loads in accordance with the permissible unit stresses provided in the building code. Columns shall be anchored to the foundations to resist all forces acting thereon.

Sec. 22. Details of Design.

(1) **Minimum Thickness of Material.** The minimum thickness of metal except for fillers, shall be $\frac{1}{4}$ of an inch for plates, bars and angles. Flanges of built members shall have a minimum thickness of $\frac{1}{12}$ of the width of the outstanding leg.

(2) **Connections.** The strength of connections shall develop the full strength of the members. Not less than two (2) rivets shall be used in the end of any member except lacing bars.

(3) **Riveting.** In proportioning rivets their nominal diameter shall be used. The minimum distance between centers of rivets shall be three diameters. The maximum pitch, in the direction of the stress shall be 6 inches. For angles with two gauge lines and rivets staggered, the maximum shall be twice the above in each line.

Where two or more plates are used in contact, rivets not more than 12 inches apart in either direction shall be used to hold the plates together.

The maximum pitch at the end of compression members shall not exceed four diameters of the rivet for a length equal to twice the width of the member.

The distance from the center of a rivet hole to the edge of the material shall not be less than $\frac{3}{4}$ of an inch for $\frac{1}{2}$ inch rivets; one (1) inch for $\frac{5}{8}$ inch rivets; $1\frac{1}{4}$ inches for $\frac{3}{4}$ inch rivets, $1\frac{1}{2}$ inch for $\frac{7}{8}$ inch rivets; $1\frac{3}{4}$ for one (1) inch rivets. In the case of beams and channels these requirements may be changed to suit the standard gauge of such material.

The maximum distance from any edge shall be eight (8) times the thickness of the outside plate, but shall not exceed 5 inches.

All rivets shall fill the holes completely; the heads shall be hemispherical and concentric with the axis of the rivet.

(4) **Pins.** The diameter of the pins shall not be less than $\frac{8}{10}$ the largest dimension of an eye bar attached to them. Pins shall fit the pin holes within $\frac{1}{50}$ of an inch, for pins less than $4\frac{1}{2}$ inch diameter; for larger pins the clearance may be $\frac{1}{32}$ of an inch. Members shall be packed on pins, using filling rings where necessary to prevent any lateral movement. Pins shall be long enough to insure a full bearing of all connecting parts upon the turned body of the pin. They shall be secured by nuts. The screw ends shall be long enough to permit burring the threads.

Sec. 23. Protection of Metal Work.

In riveted work the surface coming in contact shall each be painted before being riveted together. All parts which are inaccessible for painting after erection shall have two coats of paint at the time of fabrication. All metal work unless otherwise noted in the building code, shall be thoroughly cleaned of all scale, dirt and rust and be given one coat of paint. After erection all such work shall be painted at least one additional coat of paint of a color different from the first coat. No paint shall be applied when the surfaces are exposed to wet or freezing weather. All pockets permitting the deposition of dirt and water shall be filled with some waterproof compound to eliminate possible corrosion. All steel passing through soil or water shall be thoroughly covered with Portland cement mortar. All machine finished surfaces shall be well coated with whitelead and tallow before being shipped or exposed to the elements.

All paint shall possess properties which will insure the best possible protection of the metal. The pigment shall be chemically inert after application and the vehicle shall be the equal of pure boiled linseed oil.

Sec. 24. Any person, firm or corporation building in violation of any of the provisions of this ordinance, or any person who shall assist in the violation or shall fail to comply with any of the provisions of this ordinance, or shall build in violation of any detailed statement of application, plans or specifications submitted or approved thereof, provided such detailed plan as accepted is according to the provisions of this ordinance, shall be liable to a fine of not less than ten (10) Dollars and not more than Five Hundred (500) Dollars, or in default of payment thereof by imprisonment in the House of Correction of Milwaukee County, for not more than six (6) months, and each and every such violation or non-compliance for each and every day thereof shall be considered a separate offense. It shall be no defense to any violation of this ordinance that such plans or any part thereof were accepted by any officer of the City of Milwaukee or passed upon with the approval thereof or any building permit issued thereunder.

INSERT II. 59½

KIND OF TIMBER.	TENSION		COMPRESSION.			TRANSVERSE.		SHEARING.	
	With Grain.	Across Grain.	With End Bearing.	Grain. Under 15 dia.	Across Grain.	Extreme Fibre Stress.	Modulus of Elasticity.	With Grain.	Across Grain.
White Oak	1,200	200	1,500	1,125	500	1,500	1,200,000	240	1,000
White Pine	700	50	1,100	825	200	1,000	1,130,000	100	500
Long Leaf Yellow Pine.....	1,200	60	1,500	1,125	350	1,800	1,600,000	175	1,250
Short Leaf Yellow Pine.....	1,000	50	1,200	900	300	1,500	1,475,000	150	1,000
Douglas Fir	800	..	1,100	825	200	1,300	1,500,000	150	....
Norway Pine	800	50	1,000	750	250	1,200	1,190,000	120	....
Spruce and Eastern Fir.....	800	50	1,000	750	200	1,000	1,300,000	125	750
Hemlock	600	..	900	675	200	700	900,000	100	600
Cypress	600	..	1,100	825	240	1,100	1,150,000	100	....
Cedar	700	..	1,100	825	300	1,100	800,000	100	400

Sec. 25. All parts of ordinances contravening with this ordinance are hereby repealed.

Sec. 26. This ordinance shall take effect and be in force from and after twenty days following its passage and publication.

Passed August 4, 1913.

File Number 4562.

95—AN ORDINANCE

Regulating timber construction.

The Mayor and Common Council of the City of Milwaukee do ordain as follows:

Section 1. Quality. All timber used in construction work shall be sound, close grained and free from defects that will materially impair its strength or fitness for the purpose intended.

Sec. 2. Unit Stresses and Formulae. The maximum unit working stresses due to the combined effect of dead and live loads shall not exceed the following values in pounds per square inch: SEE INSERT II.

For compression members whose length does not exceed 15d. the foregoing values given for "compression under 15 diam." may be used.

When the length of the compression member exceeds 15 d. the above values given for "compression with grain" shall be reduced as follows:

$$S = C \frac{1 - \frac{1}{60d}}$$

Where S = Allowable working stress per square inch.

C = "Compression with grain."

1 = Unsupported length of member in inches.

d = Least width of member in inches.

In no case shall the length of compression members exceed thirty times the least width of the member.

All members subject to bending as girders, beams and joists with rectangular sections shall be assumed as supported at the ends and shall be designed for flexure and horizontal shear in accordance with the following formulae:

$$M = \frac{Sbd^2}{6} \text{ For all conditions of loading.}$$

$$P = \frac{1}{9} \frac{Sbd^2}{L} \text{ For uniform loading.}$$

$$D = \frac{Pl^3}{76.8 EI} \text{ For uniform loading.}$$

$$H = \frac{3}{2} \frac{bd}{V}$$

$$M = \text{Bending moments in inch pounds (dead plus live).}$$

S = Extreme fibre stress, given in above table of units.

b = Width of member in inches.

d = Depth of member in inches.

P = Total load in pounds (dead plus live).

L = Distance center to center of supports in feet.

D = Deflection at center in inches.

l = Distance center to center of supports in inches.

E = Modulus of elasticity given in above table of units.

I = Moment of inertia of the cross section, referred to neutral axis at right angles to the line of action of the forces producing the bending.

H = Horizontal shear or shearing with grain given in above table of units.

V = Total vertical shear at the section under investigation.

All members subject to bending shall be properly stiffened laterally to prevent buckling.

Sec. 3. Any person, firm or corporation or agent violating any of the provisions of this ordinance or any firm or corporation or agent assisting in the commission of any violation of any of the requirements thereof, or any person, firm or corporation or agent who shall neglect to do each and every act required herein, whether such act shall have been approved by the Inspector of Buildings or not, shall for each and every day's violation or non-compliance be liable to a fine of not less than five (5) dollars nor more than five hundred (500)

dollars or in default of fine by imprisonment in the House of Correction of Milwaukee County not less than one day nor more than six months.

Sec. 4. All ordinances or parts of ordinances contravening the provisions of this ordinance are hereby repealed.

Sec. 5. This ordinance shall take effect and be in force from and after twenty days following its passage and publication.

Passed August 4, 1913.

AN ORDINANCE

To Regulate the Use of Concrete Blocks for Buildings.

The Mayor and Common Council of the City of Milwaukee do ordain as follows:

Section 1. No building built of concrete blocks shall exceed a height of 60 feet above the grade. When concrete blocks are used in the construction of buildings; the thicgness in inches of enclosing and bearing walls shall not be less than set forth herein.

For business, public and partly public buildings:

	Base-	Stories				
	ment.	1st	2nd	3rd	4th	5th
One story	12	12	..	..	..	..
Two story	16	12	12	..	..	..
Three story	16	16	12	12	..	..
Four story	20	16	16	12	12	..
Five story	24	20	20	16	12	12

For dwellings, tenements or apartment houses:

	Base-	Stories					
	ment	1st	2nd	3rd	4th	5th	6th
One story	12	10	..	..	..	..	..
Two story	12	12	10	..	..	..	..
Three story	16	12	12	10	..	..	..
Four story	16	16	12	12	10	..	..
Five story	20	16	16	12	12	10	..
Six story	20	20	16	16	12	12	10

A story is the perpendicular distance from one floor to the next, or from the floor to the roof, but no story shall be more than 18 feet in height.

Parapet walls shall not be less than 10 inches in thickness. Enclosing basement walls of frame dwellings not over two stories in height above the basement shall have walls not less than 10 inches thick, if such walls are not more than 5 feet below the grade; the walls shall not be less than 12 inches thick if more than 5 feet and less than 6 feet below grade, and not less than 16 inches thick if 6 feet or more below the grade. No enclosing basement walls of a brick veneered dwelling or of a frame building higher than two stories above the basement shall be less than 12 inches thick.

Where walls are longer than 100 feet between cross walls or offsets of at least 4 feet or where they are higher than 14 feet unbraced or where openings reduce the sectional bearing area more than 35 per cent. they shall be increased in the thickness from 10 inches to 12 inches or shall be increased 4 inches above the tabulated thickness where such shows 12 inches or more, or shall have pilasters not over 16 feet between centers projecting not less than 8 inches and of not less than 16 inches face.

All other walls of concrete blocks shall not be less in thickness than provided for brick walls as set forth in other parts of the ordinance regulating the thickness of wall.

In case concrete blocks are not of the full thickness of the wall they shall overlap each other across the thickness of the wall in every course not less than 4 inches; and at least 50 per cent. of the solid parts of the blocks shall be directly over each other when laid in the walls.

Sec. 2. Where the face of the wall only is of concrete blocks and the backing of brick or vice-versa, the blocks shall be bonded to the brick work with headers projecting 4 inches, and every third block course shall be a header course. No block facing shall be less than 4 inches thick.

Sec. 3. Blocks in building walls shall be laid up in cement mortar.

Sec. 4. Hollow concrete blocks shall not be used in party walls except when filled solid.

Sec. 5. Blocks shall be made of cement, sand or stone screenings, gravel or broken stone or broken slag thoroughly mixed with clean water and shall not contain less cement than in the following proportions of solids:

Not more than 3 parts of sand or stone screenings to one part of cement to which may be added not more than 4 parts of gravel, broken stone or broken slag. The cement shall be Portland of a specific gravity of not less than 3.1 and of a fineness so as to leave not more than 8 per cent. residue on a No. 100 sieve and not more than 25 per cent. on a No. 200 sieve; it shall not develop initial set in less than 30 minutes and shall not set hard in less than one (1) hour nor more than ten (10) hours; it shall have a tensile strength per square inch at the age of 24 hours in moist air of not less than 75 pounds, at the age of 7 days, one (1 day in moist air, 6 days in water) of not less than 500 pounds, and at the age of 28 days (1 day in moist air, 27 days in water) of not less than 600 pounds, it shall have constancy in volume, proven by subjecting three inch diameter thin pads to dry air, water and steaming tests; it shall not contain more than 1.75 per cent. of anhydrous sulphuric acid (SO_3) nor more than 4 per cent. of magnesia (MGO).

The sand shall be clean and sharp, the largest particle to pass a one-fourth inch mesh sieve; the sand shall not contain more than 5 per cent. of clay and no other impurities. In place of sand a proportionate amount of stone screenings may be used.

The gravel or broken stone or broken slag shall be clean, the largest pieces to pass a three-quarter inch mesh sieve and be retained on a one-quarter inch mesh sieve.

Sec. 6. The air space of hollow concrete blocks shall not be more than 35 per cent.

Sec. 7. Blocks testing 350 pounds to the square inch shall be stored at least ten (10) days before being used in basements of frame buildings or in buildings of other construction not more than one (1) story in height, but in all other buildings such blocks shall be stored at least 28 days, and shall be capable of standing a test of

at least 700 pounds per square inch at 28 days before crushing, and all blocks shall have a mark or impression showing the identity of the manufacturer and the date of manufacture.

Special blocks for enclosures may be used after seven (7) days' storage if made of a concrete containing at least two (2) parts cement, three (3) parts of stone screenings or sand and four (4) parts of gravel, broken stone or broken slag.

In computing the area of the blocks no deduction shall be made for hollow spaces.

Sec. 8. In order to ascertain the strength of the blocks the Inspector of Buildings may require tests to be made and any blocks selected by him shall be delivered by the owner or builder to the testing laboratory in the city free of charge; the testing to be done without cost to the owner or builder.

Any and all blocks failing to withstand such test shall be condemned by the Inspector of Buildings and shall not be used in the construction of any building.

Sec. 9. Any person, firm or corporation using concrete blocks in the construction of buildings in violation of any of the provisions of this ordinance, or any person who shall assist in the violation or shall fail to comply with any of the provisions of this ordinance, or shall build in violation of any detailed statement of application, plans and specifications submitted or approved thereof, provided such detailed plan as accepted is according to the provisions of this ordinance, shall be liable to a fine of not less than \$10.00 and not more than five hundred dollars (\$500.00), or in default of payment thereof by imprisonment in the House of Correction of Milwaukee County for not more than six months, and each and every such violation or non-compliance for each and every day thereof shall be considered a separate offense. It shall be no defense to any violation of this ordinance that such plans or any part thereof were accepted by any officer of the City of Milwaukee or passed upon with the approval thereof or any building permit issued thereunder.

Sec. 10. All parts of ordinances contravening with this ordinance are hereby repealed.

Sec. 11. This ordinance shall take effect and be in force from and after twenty days following its passage and publication.

Passed March 31, 1913.

File Number 4865.

99—AN ORDINANCE

Regulating Arches, Lintels, Light Shafts, Roofs, Cornices, Etc.

The Mayor and Common Council of the City of Milwaukee do ordain as follows:

Section 1. Openings for doors and windows in all buildings shall have abutments or lintels of stone, iron, steel or concrete, which will have a bearing at each end of not less than six (6) inches on the wall.

On the inside of all openings in which the outer lintels are less than the thickness of the wall to be supported, there shall be timber lintels, and shall have an arch turned over the timber lintel, or the inside lintel may be cast or wrought iron or steel, in which case stone blocks or cast-iron plates shall not be required at the ends where the lintel rests on the walls, provided the openings are not more than six (6) feet in width.

Wood lintels must be solid for the full thickness of the head. No wood lintels will be permitted in fireproof buildings.

Sec. 2. Light Shafts.

No space or light shaft of less than forty (40) square feet for each three (3) story building, or less than fifty (50) square feet for a four (4) story building, and so on increasing ten (10) square feet sectional area for each additional story in height, shall be considered as affording means of communication with the outer air, and such open space or light shafts, if covered with a skylight or roof of any kind, shall not be considered as fulfilling the terms of the ordinance.

All skylights made at the foot of light walls or light courts shall be made either of prismatic lights set in

cast-iron frames, or of glass at least $\frac{5}{8}$ of an inch thick set in metallic frames; and if the latter are used they shall be protected by wire netting placed at least six (6) inches above the glass of such skylights, or of wired glass set in metallic frames and metallic sash.

Sec. 3. Roofs.

The use of combustible shingle roofs or other forms of combustible roof covering is strictly prohibited within the fire limits of the City of Milwaukee upon buildings to be erected or altered, or where roofs of present buildings are to be recovered.

Sec. 4. Mansard Roofs.

If a mansard or other roof of a like character having a pitch of over sixty (60) degrees be placed on any building exceeding forty (40) feet in height, the roof shall be constructed of fire resisting materials.

Sec. 5. Roof on Contiguous Buildings.

In all cases where two or more buildings over two (2) stories in height are built adjoining one to another and separated by means of a division wall, the roof sheathing, cornices or ridge moldings shall not extend over or cover any portion of such division wall unless such roofs are constructed wholly of fireproof materials.

Sec. 6. Cornices.

In all cases where a wall is finished with a stone or terra cotta cornice, sixty-five (65) per centum of the weight of the material for such cornice shall be on the inside of the outer face of the wall, or shall be securely anchored so that the cornice shall be firmly balanced upon the wall. In skeleton construction all horizontal and vertical joints shall be made water-tight. Cornices, gutters, eaves, or parapets of all buildings over forty (40) feet high, excepting residences, shall be constructed of non-combustible material, and shall be well secured to the wall with iron anchors or metal brackets.

The backs of tin and iron coverings shall have at least one (1) coat of paint, and all cornice lookouts and anchors two (2) coats of paint.

Where cornices project over the public highway the lookouts to which the cornice on all buildings is secured shall in all cases be of metal, placed not more than four

(4) feet apart and firmly secured to the wall.

In all cases the walls shall be carried up to the sheathing of the roof, and where the cornice projects above the roof, the walls shall be carried up to the top of the cornices.

Sec. 7. Repair of Cornices.

All exterior wooden cornices, except for residences and buildings under forty (40) feet in height that shall hereafter require to be repaired or replaced, shall be constructed of some non-combustible material, as required for new buildings; and all exterior wooden cornices or gutters, except for residences and buildings under forty (40) feet in height, that may hereafter be damaged by fire or otherwise, if replaced, shall be constructed of non-combustible material.

Sec. 8. Snow Brakes.

Snow brakes or guards made of incombustible materials shall be attached to all roofs of buildings over two (2) stories, or twenty-five (25) feet high hereafter constructed or altered along any courtway or street lines or within ten (10) feet of the same, having a pitch of more than twenty-five (25) degrees, unless projecting cornices or gutters are so arranged as to form adequate snow guards.

Sec. 9. Temporary Supports.

Any temporary support placed under any structure, wall, girder or beam during the erection, finishing, alteration or repairing of any building or structure, or part thereof, shall be of sufficient strength to safely carry the load to be placed thereon.

Sec. 10. Scaffold, Staging and Hoist.

Scaffolding, staging, hoists, and such other appurtenances of building operations must be amply strong and secure for the purposes intended.

Sec. 11. Outside Scaffolds.

Outside scaffold, either supported by continuous supports from the ground up or upon thrustouts from windows and walls above the third floor, shall be provided with tight plank floors and ten (10) inch curbs and 2x4 inch hand rail thirty-four (34) inches high on the outside; and when such scaffolds are used on buildings over

seventy-five (75) feet high there shall be a guard rail filled in with wire netting not exceeding two (2) inch mesh, or seven-eighths ($\frac{7}{8}$) inch boards not over one-half ($\frac{1}{2}$) inch apart secured to uprights not less than two (2) inch by four (4) inch scantlings thoroughly braced and secured. Said enclosure shall be kept at least five (5) feet in advance of the level on which the workmen employed on said front are working.

Sec. 12. Closing of Openings.

During the construction or alteration of any building within ten (10) feet of any street line or unprotected sidewalk, the windows on each floor above the second shall be temporarily or properly enclosed to prevent material or building material waste from falling onto the public highway, as soon as the story is built.

Sec. 13. Temporary Stairs.

All buildings over three (3) stories high shall be provided by the owners thereof with temporary plank stairs of no greater pitch than seventy-five (75) degrees to the horizon, for the facilitation of inspection, and said stairs shall be kept in good repair until the permanent stairs are made accessible.

Sec. 14. Raising to Grades.

If any building shall have been built before the street upon which it is located is graded, or if the grade is altered, such building may be raised or lowered to meet the requirements of such grade.

Sec. 15. Privy Vaults.

No privy vault shall be built or maintained by any person on any lot or land fronting on a street or alley in which water pipe and sewer has been laid, to which service pipe and house drain can be attached, except a temporary privy used during the construction of a building.

All privy vaults hereafter erected or maintained by any person, persons, company or corporation, on any lot, or part of lot, or land fronting on any street, alley or public ground, which are not provided with public sewer and water pipe, shall be constructed and maintained watertight, shall not be located within two (2) feet of the line of any abutting lot, part of lot, or land, nor within

eight (8) feet of any door, window or other opening of any building used for residence purposes.

No person shall be granted for the erection or alteration of any building upon any lot, part of lot, or land fronting on any street or alley which are supplied with water pipe and sewer, the building plan of which does not show, nor specifications state, the location of a water closet or closets and fixtures, and their connection with water main pipe and sewer in the street or alley as the case may be.

Every water closet in any building shall have a window opening directly to a street, yard, court or light shaft.

Before proceeding with the erection of any building within the corporate limits of the City of Milwaukee one or more substantial Dry Earth Closets must be provided by the owner or his agent for the use of persons engaged in any work on any building or other structure on said premises.

Such Dry Earth Closets shall be constructed in a substantial manner, properly enclosed from public view and sufficient in number to accommodate all persons engaged in doing any work upon any building or structure on the premises.

As often as may be necessary, and at the completion of the work on the building or other structure, the Dry Earth Closets shall be removed from the premises and no part of the contents shall be left or disposed on the premises.

Sec. 16. Any person, firm or corporation, servant or agent constructing or altering any building in violation of the provisions of this ordinance or any person who shall assist in the violation or shall fail to comply with any of the provisions of this ordinance, or shall construct or alter any building in violation of any detailed statement of application, plans and specifications submitted or approved thereof provided such detailed statement or plans as accepted are according to the provisions of this ordinance and in case it is not it shall be no defense to any violation of this ordinance that such plans or any part thereof were accepted by any officer of the City of Milwaukee or passed upon with approval

thereof or any building permit issued thereunder subject to the above provisions shall for each and every such violation or non-compliance for each and every day thereof be liable to a fine of not less than ten (10) dollars nor more than five hundred (500) dollars or in default of fine by imprisonment in the House of Correction of Milwaukee County not more than six months.

Sec. 17. All ordinances or parts of ordinances contravening the provisions of this ordinance are hereby repealed.

Sec. 18. This ordinance shall take effect and be in force from and after twenty days following its passage and publication.

Passed August 4, 1913.

File Number 4971.

104—AN ORDINANCE

Regulating Stairways.

The Mayor and Common Council of the City of Milwaukee do ordain as follows:

Section 1. Every building shall have at least one stairway extending from the lowest to the highest floor; such stairway shall not be less than three (3) feet wide and have a direct exit to the outside at the grade or ground floor.

Sec. 2. Every building more than one (1) story above the basement shall have access to the roof either by an inside stairway or a fixed step ladder. The stairway or fixed ladder extending to the roof shall be located so as to be accessible from all points of the upper floor of the building. The opening to the roof shall be not less than 20x30 inches, closed with a tight fitting door or cover, clad on the outside with metal, fastened from the inside only with bolts or hooks and shall never be locked; any building requiring more than one (1) stairway according to this ordinance shall have at least one such stairway extend to the roof, and exit to roof from such stairway shall be through a door of not less than 3x6½ feet in size.

Sec. 3. Any basement used for living or business purposes or places of assemblage or where boilers or en-

gines are located shall have at least one stairway leading direct to the outside of the building or into a fireproof passage which leads direct to the outside. The number of stairways leading from a basement used for business purposes shall not be less than required for the upper floors of such building.

Sec. 4. All buildings of less floor area than 3,500 square feet on each floor shall have at least one interior stairway, if more than two (2) stories in height there shall be at least two (2) stairways, and shall have at least one additional stairway for each additional 6,000 square feet floor area or major fraction thereof; these stairways are in addition to any fire escape or outside stairway, which may be required by other ordinances.

Sec. 5. Buildings three (3) stories or more in height shall have at least one of the stairways enclosed in a fireproof shaft of not less than 2-inch solid thickness and accessible from each floor of the building, and all windows and sash in such shaft shall be of metal and glazed with wire glass. All doors to this stairway shall be standard fire doors which close automatically and have metal frames. Where more than one (1) stairway is required for a building, such stairways shall be located as far apart as practical.

Sec. 6. No stairway in a dwelling shall be less than three (3) feet wide and in a place of business less than four (4) feet wide, measured in the clear between the hand rails.

Sec. 7. Hand rails shall be provided at least at one side of the stairway in buildings three (3) stories or less in height; and in all buildings over three (3) stories in height or all places used as places of assemblage there shall be hand rails at both sides of the stairway.

Sec. 8. Any person, firm or corporation, servant or employe, constructing or altering any building in violation of the provisions of this ordinance or any person who shall assist in the violation or shall fail to comply with any of the provisions of this ordinance or shall construct or alter any building in violation of any detailed statement of application, plans and specifications submitted or approved thereof, provided such detailed

statement or plans as accepted are according to the provisions of this ordinance and in case it is not it shall be no defense to any violation of this ordinance that such plans or any part thereof were accepted by any officer of the City of Milwaukee or passed upon with approval thereof or any building permit issued thereunder subject to the above provisions, shall for each and every such violation or non-compliance for each and every day thereof be liable to a fine of not less than ten (10) dollars, nor more than five hundred (500) dollars or in default of fine by imprisonment in the House of Correction of Milwaukee County not more than six months.

Sec. 9. All ordinances or parts of ordinances contravening the provisions of this ordinance are hereby repealed.

Sec. 10. This ordinance shall take effect and be in force from and after twenty days following its passage and publication.

Passed August 4, 1913.

File Number 4662.

96—AN ORDINANCE

Regulating Superimposed Loads upon Structures.

The Mayor and Common Council of the City of Milwaukee do ordain as follows:

Section 1. The following minimum super-imposed or live loads uniformly distributed in pounds per square foot, shall be used in calculating the stresses to be sustained by any structure:

	Lbs. per Square foot
Foor floors of dwellings	30
For floors of hotels, tenements, boarding and lodging houses, hospitals and club houses ..	30
For first floor of office buildings	80
For all other floors of office buildings	40
For floors of class and recitation rooms of school buildings	40
For floors of all other parts of school build- ings	60

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7

For floors of theaters, churches, auditoriums and places of assemblage having fixed seats ..	50
Other parts of these buildings have no fixed seats	80
For floors of dance halls, gymnasiums, armories.	100
For floors of store buildings for the sale or stor- age of light merchandise and buildings for light manufacturing	100
For floors of stables	80
For floors of garages	80
For grand stands, reviewing stands or tempo- rary structures for seating	80
All stairs	60
Balconies and canopies	80

Floors intended for the storage of heavy merchandise or manufacturing purposes where heavy loads may be placed, or where moving machinery is placed, shall be designed with the factor of safety required in these ordinances for the respective materials used in construction.

	Lbs. per Square foot
Roofs	30
Hollow sidewalks	150
	Lbs. per Square foot

Sec. 2. Wind pressure acting horizontally 30

Sec. 3. The floor spans between two joists or beams shall be designed for a load 10% in excess of the loads assumed on the entire floor.

Sec. 4. The joists, beams, girders, columns and walls of any roof shall be designed for the full load.

Sec. 5. Floor girders shall be designed to carry not less than 85% of the live load.

Sec. 6. In a factory, store, warehouse, or other commercial building the live loads to be supported by walls, columns or foundations, shall be assumed at not less than 85% of the full load of the top floor, 80% of the next lower floor and 75% for each floor below this.

In all other buildings the live loads to be supported by walls, columns and foundations, shall be assumed at

not less than 85% of the full load of the top floor and 5% less for each next lower floor until a ratio of 50% is reached, which shall be assumed for any further lower floor.

Sec. 7. The overturning moment due to wind pressure shall not exceed 75% of the moment of stability of a structure due to the dead load only, otherwise the structure shall be anchored to their foundations which shall be of sufficient weight to insure the stability of the structure; also diagonal bracing or rigid connections between upright and horizontal structural members shall be provided to resist distortion. The wind stress may be disregarded in a structure of less than 100 feet in height whose height does not exceed twice its width.

Sec. 8. Factor of Safety.

If no maximum safe loads are prescribed for any materials or when no minimum sizes of any structural parts of a building are prescribed in the ordinances the factor of safety as prescribed in ordinance on steel and timber construction shall be used.

Sec. 9. For materials exposed to the elements or to vibration of moving loads the factor of safety shall be increased 50%.

Sec. 10. In addition to the super-imposed loads established by this ordinance, provisions must be made in calculating the stresses of any structure to take care of special loading, distributed or concentrated.

Sec. 11. Any person, firm or corporation building in violation of any of the provisions of this ordinance, or any person who shall assist in the violation or shall fail to comply with any of the provisions of this ordinance, or shall build in violation of any detailed statement of application, plans and specifications submitted or approved thereof, provided such detailed plan as accepted is according to the provisions of this ordinance, shall be liable to a fine of not less than Ten (10) Dollars and not more than Five Hundred (500) Dollars, or in default of payment thereof by imprisonment in the House of Correction of Milwaukee County for not more than six (6) months, and each and every such vio-

lation or non-compliance for each and every day thereof shall be considered a separate offense. It shall be no defense to any violation of this ordinance that such plans or any part thereof were accepted by any officer of the City of Milwaukee or passed upon with the approval thereof or any building permit issued thereunder.

Sec. 12. All parts of ordinances contravening with this ordinance are hereby repealed.

Sec. 13. This ordinance shall take effect and be in force from and after twenty days following its passage and publication.

Passed August 4, 1913.

AN ORDINANCE

Regulating the Height of Buildings.

The Mayor and Common Council of the City of Milwaukee do ordain as follows:

Section 1. This ordinance or any other ordinance regulating the construction of buildings the following definitions shall apply unless specifically mentioned otherwise: -

'Sec. 2. A building is of fireproof construction if all the walls, partitions, piers, columns, floors, ceilings, roof and stairs are built of incombustible material and if all metallic structural members are protected from fire by an incombustible fire resisting covering of low heat conduction of not less than 2 inches thickness for columns and girders and not less than 1½ inches thickness for other structural parts. This thickness shall be outside of the extreme edges of structural members. Such covering shall consist of Portland cement concrete, brick, terra cotta or tile laid in cement mortar, the plastering shall not be applied to wood lath or wood furring strips.

In a fireproof building the trimmings and finished floor may be of wood. Any space between the flooring and the fireproof material below same shall not be greater than 2 inches.

Outside doors and windows and their frames facing a court, street or alley less than 30 feet wide or being less than 30 feet away from any boundary line between

adjoining premises shall be made of metal and the glass in same shall be wire glass.

All other doors and windows and their frames may be of wood.

Inclosing walls shall not be less than 12 inches thick if of brick, tile, terra cotta or plain concrete or shall not be less than six inches thick if of reinforced concrete.

Sec. 3. Mill Construction. A building is of mill construction if all walls are built of incombustible material, but no enclosing wall shall be less than 12 inches thick if of brick, tile, terra cotta or plain concrete, which is not reinforced, and if post girders and joist are of timber which shall measure in width at least one half its depth. No joist shall measure less than 72 square inches and no post shall measure less than 100 square inches in sectional area. If any steel or iron is used for structural purposes, it shall be fireproofed with not less than one inch incombustible material or metal lath and plaster. The floors shall be not less than 3 inch lumber having grooves and splines at their joints and shall be covered with incombustible felt and shall have a separate finished floor of not less than $\frac{7}{8}$ inch thickness.

The lower thickness of the roof planking shall be not less than 2 inch lumber tongued and grooved and covered with incombustible felt and the upper thickness shall be not less than $\frac{7}{8}$ inch, and there shall be an incombustible roof covering.

There shall be no openings in the floor unless protected by fireproof doors and no concealed air spaces except such as are enclosed by incombustible material.

All stairways and elevators shall be enclosed with walls of incombustible material.

Outside doors and windows and their frames facing a court, street or alley less than 30 feet wide or being less than 30 feet away from any boundary line between adjoining premises shall be made of metal and the glass in same shall be wire glass. All other doors and windows and their frames may be of wood.

Sec. 4. Ordinary Construction. A building is of ordinary construction if all enclosing walls consist of stone,

brick, tile or concrete, and the roof has an incombustible covering; also in which any of the following conditions exist: Structural iron parts are not protected; the plastering is on wood lath with concealed hollow spaces behind any wood joist; rafters or studs of smaller section than required for mill construction but no joist, rafters and studs shall be of less than 2 inches lumber, with uncovered openings in the floor; where stairways and elevators are not enclosed with fire resisting material.

Outside doors and windows and their frames facing a court, street or alley less than 30 feet wide or being less than 30 feet away from any boundary line between adjoining premises shall be made of metal and the glass in same shall be wire glass. All other doors and windows and their frames may be of wood.

Sec. 5. Frame Buildings. A frame building or a wooden veneered building is a building whose structural parts and enclosing walls consist of wood. If such enclosing walls are veneered, encased or faced with stone, brick, tile, concrete, plaster or metal whose stability or rigidity depends upon the frame wall the building is also termed a frame building.

Sec. 6. Business Buildings. All buildings not used solely as private residence, apartment, tenement or boarding house shall be considered as business buildings regarding their requirements of construction.

Sec. 7. Heights of Building. The height of a building is measured at the center line of its principal front from the street grade or if setting back from the street from the grade of the ground adjoining the building to the highest part of the roof, if a flat roof, or to a height two-thirds of the roof if a gabled or hipped roof. If the grade of the lot or adjoining street in the rear or alongside of the building falls below the grade of the front the height shall be measured in the center of the side showing the greatest fall.

Sec. 8. Buildings of fireproof construction shall be limited to a height of 225 feet.

Sec. 9. In a fireproof building exceeding 160 feet in height, all stairways and corridor windows and doors shall be of fireproof construction with metal frames

and all sash connected therewith shall be of metal and all glass shall be wire glass. The stairway and corridor finish and floors shall be entirely of incombustible material. Such buildings shall be permitted only on a public street of not less width than 80 feet, unless such buildings are set back from the street line to a line not less than 40 feet distant from the center of the street.

Sec. 10. Buildings of mill construction shall not be higher than 85 feet above the grade.

Sec. 11. Buildings of ordinary construction shall not be higher than 60 feet above the grade.

Sec. 12. Frame or veneered buildings shall not be higher than 40 feet above the grade.

Sec. 13. Roof appendages such as dormer windows, domes, towers, turrets, spires, skylights, monitors, pent-houses or other projections above the main roof of a building shall not exceed in total area 20 per cent of the main roof, otherwise the building height limit shall apply to the roof of such appendage.

Such roof appendages of any frame or veneered building shall not exceed a height of 50 feet above the grade; if such appendage is on the roof of a business building the walls and roof of such appendage shall be covered with incombustible material.

Such appendage on the roof of a building of ordinary construction shall not exceed a height of 80 feet above the grade.

Such appendage on the roof of a mill constructed building shall not exceed a height of 110 feet above the grade.

Pent houses containing elevator machinery shall be constructed as defined in the elevator ordinance.

Sec. 14. All structures shall be designed to resist the horizontal wind pressure of thirty pounds per square inch.

Sec. 15. All buildings more than one hundred (100) feet in height, shall be equipped with a sprinkler system, or there shall be a stand pipe inside of the building at least four (4) inches in diameter, extending from the basement grade to the roof. There shall be at least one such stand pipe where the building area of any

story is not more than 10,000 square feet, and one additional stand pipe for each additional 10,000 square feet or fraction thereof. There shall be a hose connection of fire department standard to such stand pipes on each floor with hose attached sufficient to reach every part of such floor. Such stand pipe shall be connected with a pressure tank not lower than the top floor and a pump system of a capacity of not less than 5,000 gallons.

Sec. 16. Any person, firm or corporation building in violation of any of the provisions of this ordinance or any person who shall assist in the violation or shall fail to comply with any provisions of this ordinance or who shall build in any violation of any detailed statement of application, plans or specifications submitted or approved thereof providing such detailed plans as accepted are in accordance to the provisions of this ordinance and in case they are not it shall be no defense to any violation of this ordinance, that such plans or any part thereof were accepted by an officer of the City of Milwaukee or passed upon with approval thereof, or any building permit issued thereunder subject to the above provisions shall for each and every such violation or non-compliance for each and every day thereof be liable to a fine of not less than ten (10) dollars nor more than five hundred (500) dollars, or in default of fine by imprisonment in the House of Correction of Milwaukee County not more than six months.

Sec. 17. All parts of ordinances contravening the provisions of this ordinance are hereby repealed.

Sec. 18. This ordinance shall take effect and be in force from and after its passage and publication.

Passed Dec. 23, 1912.

AN ORDINANCE

To Regulate the Floor Areas in Buildings.

The Common Council of the City of Milwaukee do ordain as follows:

Section 1. The area of any floor of a building shall be measured in the clear between incombustible and fire resisting walls. Walls of any other kind of material shall not be considered as dividing walls.

Sec. 2. Dividing walls will be required: In fireproof buildings having a floor area greater than 18,000 square feet.

In buildings of mill construction having a floor area greater than 10,000 square feet.

In buildings of ordinary construction having a floor area greater than 7,500 square feet.

In a wood frame building having a floor area greater than 5,000 square feet.

Buildings not exceeding two stories in height above the basement may be increased in floor area 50 per cent. in excess of the above table and the percentage of increase shall be computed on the original area.

If such buildings are equipped with an automatic sprinkler system the floor area may be increased 30 per cent, and if located so as to front on not less than three streets or two streets and an alley the floor area may be further increased 20 per cent.

Sec. 3. Where dividing walls are required in any of the above mentioned buildings such walls shall be of solid incombustible fire resisting materials, and of the same thickness as required by the table for enclosing walls, and shall be continuous from the foundation to three feet above the roof in non-fireproof buildings. All openings in these division walls shall have standard fire doors on each side of the walls.

Sec. 4. Each subdivided part of such building shall be provided with stairs and exits the same as a separate building.

Sec. 5. One story buildings of fireproof construction shall not be limited in floor area.

Sec. 6. Any person, firm or corporation owning, controlling or managing any building or premises, wherein or whereon anything in violation of this ordinance shall exist or shall be placed, or any person, firm or corporation employed who shall assist in the commission of any violation or any of the requirements hereof, or who shall build contrary to the plans and specifications submitted to the Inspector of Buildings, provided such plans and specifications are in accordance with this ordinance, or any person, firm or corporation who shall neglect to do each and every act required herein, whether such act

has been approved by the Inspector of Buildings or not, shall for each and every day's violation or non-compliance be liable to a fine of not less than five (5) dollars and not more than five hundred (500) dollars or in default of fine by imprisonment in the house of correction not less than one day nor more than six months.

Sec. 7. All parts of ordinances contravening the provisions of this ordinance are hereby repealed.

Sec. 8. This ordinance shall take effect and be in force from and after its passage and publication.

93—AN ORDINANCE

Regulating the Safety of Buildings During the Construction of Buildings.

The Mayor and Common Council of the City of Milwaukee do ordain as follows:

Section 1. All persons constructing buildings where the plans and specifications require the floors to be arched between the beams thereof, or where the floors or filling in between the floors are of fire proof material or brick work, shall complete the flooring or filling in on each floor as the building progresses before any work shall be permitted on the next succeeding floor above. If the plans and specifications of such buildings do not require filling in between the beams of floors with brick or fireproof material, all contractors for carpenter work in the course of construction shall lay the under flooring thereof on each story as the building progresses before any work shall be permitted on the next succeeding story above. Where double floors are not to be used all persons constructing the building shall keep planked over the floor one story below the story where the work is being performed.

If the floor beams are of iron or steel, the contractors for iron or steel work of such buildings in the course of construction, or the owners of such buildings, shall thoroughly plank over the entire tier of iron or steel beams on which the structural iron or steel work is being erected, except such spaces as may be reasonably required for the proper construction of such iron or steel work, and for the raising or lowering of materials to be

used in the construction of such building, or such spaces as may be designated by the plans and specifications for stairways and elevator shafts. But all such openings shall be enclosed or fenced in on all sides by barriers of at least four feet in height. In case of any opening across which are placed runways or tramways, then the entire opening shall be planked over.

If elevating machines or hoisting apparatus are used within a building in the course of construction for the purpose of lifting material to be used in such construction the contractors or owners shall cause the shafts or openings in each floor to be enclosed or fenced in on all sides by a barrier at least eight (8) feet in height. If a building in course of construction is five (5) stories or more in height, no lumber or timber needed for such construction shall be hoisted or lifted on the outside of such building.

Sec. 2. Any person violating the provisions of this ordinance shall upon conviction thereof be punished by a fine of not more than one hundred (100) dollars, or in default of payment of such fine by imprisonment in the House of Correction of Milwaukee County for not to exceed ninety (90) days.

Sec. 3. All ordinances or parts of ordinances contravening the provisions of this ordinance are hereby repealed.

Sec. 4. This ordinance shall take effect and be in force from and after its passage and publication.

Passed September 16, 1912.

File Number 5819.

AN ORDINANCE

Regulating Fire Escapes.

The Mayor and Common Council of the City of Milwaukee do ordain as follows:

Section 1. It shall be unlawful for any person, firm or corporation to construct, maintain or occupy any building more than two (2) stories high unless provided with one or more stairway and balcony fire escapes or spiral chutes, constructed of incombustible material on

the outside of such building, placed in such location and installed in such a manner, and as many in number as may be directed by the Inspector of Buildings and the Chief of Fire Department.

Such fire escapes, stairways or chutes shall be connected at each floor line by wrought iron platform, balcony, piazza or other resting place and of a length to permit access to the same; they shall be convenient of access from the interior of the building through opening not less than twenty-four (24) inches in width. Free and unobstructed access to these fire escapes shall be had through a door at each floor level.

Sec. 2. The uppermost balcony of every fire escape shall be provided with a substantial wrought iron cat ladder securely fastened to the wall of the building which shall extend three (3) feet over and above the roof of the building. Such balconies, stairways and platforms shall be supported by wrought iron brackets, all securely bolted together, the brackets to extend through the wall of the building and to be provided with nuts and washers, or iron anchors, and properly secured on the inside of the wall.

Sec. 3. The pitch of all fire escape stairways shall be at an angle of not more than 45 degrees.

Sec. 4. All balconies, stairways and platforms shall be constructed in such a manner as to maintain a load of 100 pounds per square foot; all steps shall be capable of sustaining a load of 150 pounds on each step on a factor of safety of four (4).

The floors of all balconies and platforms and treads of fire escape stairways to be made of wrought iron, square edged bars or of any other incombustible material. If square edged bars are used, the edge surfaces of bars to face upwards. (Round, or any other shaped bars are prohibited.) The bars shall not be more than $\frac{3}{4}$ of an inch apart. Stairways to be at least 24 inches wide, and balconies and platforms shall be at least 28 inches wide, and stairways shall be at least two (2) feet away from the building.

All such balconies, stairs and platforms to be provided with wrought iron bars or pipe hand rails, secure-

ly fastened to the iron work and building proper. The top rail to extend through the wall and fastened on the inside of the building with washers and bolts.

There shall be attached to the first or lower balcony a counter-balanced stairway extending to the ground. Said stairway shall be of the same construction, pitch and width and to be provided with two hand rails, as the portion of the fire escape above.

Sec. 5. Wherever spiral fire escape chutes are used, with balconies leading to entrances of chutes from the various floors of buildings, said balcony floors to be connected with a substantial, continuous, perpendicular wrought iron ladder, thoroughly secured to sides of balcony, which shall extend from five (5) feet above grade to a point three (3) feet above the roof. This ladder is for the use of the firemen for the connection of hose at the various floors and roof, and for the prompt assistance by them to those imperiled.

Sec. 6. There shall be attached to such fire escape, stair, balcony or platform, or spiral chutes, from a point five (5) feet above the ground extending to a point three (3) feet above the roof or cornice in close proximity to and accessible from fire escape, including cat ladder and a three inch wrought iron stand pipe. At each story above the first and on the roof there shall be attached a 2½ inch angle hose valve with male hose connection and a double or a Siamese "Y" female hose connection at the base of pipe, with threads to conform to the size and pattern used by the Fire Department of the City of Milwaukee.

Sec. 7. Every building required to be equipped with fire escape stairways and balconies or spiral chutes shall have displayed in conspicuous places, on each floor of such building, notices sufficient in number and in plainly legible type at least six inches in height, indicating and showing the location of such fire escape stairways, balcony or spiral chutes and the direct way to reach them. If such notice be not displayed within thirty (30) days after such equipment is installed and kept continuously displayed the Inspector of Buildings or Chief of Fire Department shall cause the building to be closed and

kept closed until the provisions of this section shall have been complied with.

Sec. 8. It shall be unlawful under any circumstances to close up or obstruct any passageways leading to any fire escape stairways, balconies or platforms, or any spiral chute of any building. No change in the position or construction of any such fire escape stairway, balcony or platform, or spiral chute shall be made unless the permission of the Inspector of Buildings and Chief of Fire Department shall first have been obtained.

Sec. 9. If any window or other opening, other than the exit to the fire escape stairway, balcony or platform, or spiral chute, abuts on, or faces any such fire escape stairway, balcony or platform, or spiral chute, it shall be provided with metal frame and wire glass, and sash of such windows or openings shall be stationary, or such window or other opening shall be closed up with incombustible material.

Sec. 10. It shall be the duty of the Inspector of Buildings to carefully examine and pass upon all applications made hereunder as well as on all drawings, plans and specifications and he shall see to it that the same in all things conform to the requirements hereof, and he may require the same to be amended, altered or changed by the applicant as he shall direct, before issuing a permit thereon, and after approving of any such application he shall issue a permit to such applicant for the erection and maintenance of such fire escape stairway, balcony or platform, or spiral chute, according to the drawings, plans and specifications therefor and shall keep a record thereof in his office.

It shall further be the duty of the Inspector of Buildings to inspect and examine all such fire escape stairways, balconies or platforms, or spiral chutes and all fastenings, braces, hand rails, and supports in connection therewith, from time to time and whenever he shall find any part thereof defective or unsafe, or in need of any repairs, he shall forthwith notify the owner or agent of the building to which such fire escape stairway, balcony or platform, or spiral chute is connected, in writing, that he or they, is or are required to make needed

repairs (specifying what such repairs consist of), within a time stated in such notice, which time shall be fixed by the Inspector of Buildings.

If any owner or owners of any building to which such fire escape stairway, balcony or platform or spiral chute is attached, shall fail, neglect or refuse as herein prescribed for, within the time limited therefor by such notice, to make such repairs or alterations, he shall be subject to the penalty of this ordinance.

Sec. 11. It shall be unlawful for any person, firm or corporation to construct, erect or remodel, or cause to be constructed, erected or remodeled, any fire escape stairway, balcony or platform, or spiral chute, without first making application to the Inspector of Buildings, and securing a permit therefor; which permit shall be issued to the applicant upon compliance with all provisions of this ordinance.

Sec. 12. Every applicant for a permit for such fire escape stairway, balcony or platform, or spiral chute, shall pay into the City Treasury the sum of one (1) dollar therefor to be credited to the General City Fund and said permit shall be duly signed by the City Treasurer and the Inspector of Buildings, and the same shall be in full for the aforesaid examination of drawings, plans, specifications and permit.

Sec. 13. Any person, firm or corporation or any officer of a corporation who shall violate or cause to be violated, any provision of this ordinance or who shall refuse or neglect to erect, construct, put up or remodel any fire escape stairway, balcony or platform, or spiral chute, according to the provisions of this ordinance, shall be deemed guilty of a misdemeanor, and shall on conviction thereof be punished by a fine of not less than ten (10) dollars, nor more than two hundred (200) dollars, together with the cost of prosecution, or by imprisonment in the House of Correction for Milwaukee County for a term not exceeding six months, or by both such fine and imprisonment, and each and every day of such violation shall be a separate offense.

Sec. 14. All ordinances and parts of ordinances con-

travening the provisions of this ordinance are hereby repealed.

Sec. 15. This ordinance shall take effect and be in force from and after twenty (20) days following its passage and publication.

AN ORDINANCE

Relating to Canopies and Hoods Extending upon Public Highways.

The Mayor and Common Council of the City of Milwaukee do ordain as follows:

Section. 1. No permanent hood or canopy shall be constructed unless constructed in the manner herein provided.

Sec. 2. There shall be a height of not less than eight (8) feet in clear between the grade of the sidewalk and the lowest point of any appendage or projection extending from any building into the public highway, in regard to the erection of any canopy or permanent hood. Permanent hoods or canopies over doors shall not extend more than five (5) feet on either side of the door, and the projection shall not exceed four (4) feet.

Sec. 3. All hoods and canopies shall have gutters and conductors connected with the sewer at the building.

Sec. 4. The projection of movable awnings shall not exceed the width of the sidewalk, and shall have a resistance of wind pressure of twenty (20) pounds, with a factor of safety of four (4).

Sec. 5. Canopies built of incombustible material throughout, and capable of resisting a superimposed load of eighty (80) pounds per square foot, with a factor of safety not less than four (4), and extending from the line to the curb at a height in the clear of not less than ten (10) feet nor more than fifteen (15) feet above the sidewalk, and to slope and drain towards the building, provided with conductors connected with the sewer of the building may be built. There shall be installed under this canopy, lights to reflect on to the highway below the canopy, equal to two (2) candle power for

each area foot of the surface of the canopy, and such lights shall be kept lighted continually from one hour after sunset until one hour before sunrise.

Sec. 6. Application for permit shall be presented to the Inspector of Buildings, together with blueprint, and a fee shall be charged for such permit and inspection by the Building Inspector of three (\$3.00) dollars for small hoods or canopies over doors or movable awnings of any kind or nature. For other canopies, a fee of six (\$6.00) dollars shall be charged.

The Inspector of Buildings shall refuse any permit which does not show fulfillment of the provisions of this ordinance in any respect, and any violation of any of the provisions of this ordinance, or any other ordinance, shall operate as an immediate revocation of such permit. The fee for permit herein mentioned shall not include street permit, when it is necessary to use the streets as mentioned or covered by any other ordinance, and such street permit shall be in addition to such permits herein mentioned.

Sec. 7. The City of Milwaukee hereby shall have and does reserve the right to at any time in the future cause the person, firm or corporation to whom a permit was granted at his, her, or its or their own cost and expense to remove such canopy, hood or removable awning whenever the Common Council by resolution or otherwise made, decide that the same is necessary; and should such person, firm or corporation fail, refuse or neglect to so remove such canopy, hood or movable awning, the Commissioner of Public Works shall remove or cause same to be removed and the cost of such removal shall be charged to such property the same as other special assessments.

Sec. 8. Any person, firm or corporation, building or erecting, in violation of any of the provisions of this ordinance, or any person who shall assist in the violation, or shall fail to comply with any provisions of this ordinance, or who shall build in any violation of detailed statement of application, plans or specifications submitted to the Inspector of Buildings, and approved thereby, or in violation of any of the provisions herein named, whether consented to, or plans accepted

by any official, agent or employe of the city, shall, for each and every violation or non-compliance, be liable to a fine of not less than ten (\$10.00) dollars nor more than two hundred and fifty (\$250.00) dollars, or in default of fine, by imprisonment in the House of Correction of Milwaukee County for not more than six (6) months.

Sec. 9. This ordinance shall take effect and be in force from and after twenty (20) days following its passage and publication.

Passed Nov. 24, 1913.

File Number 665.

100—AN ORDINANCE

To Regulate the Installation and Maintenance of Toilets and Toilet Rooms in Certain Buildings in the City of Milwaukee.

The Common Council of the City of Milwaukee do ordain as follows:

Section 1. All toilets or water-closets hereafter installed in any office building, factory, store, public building or quasi-public building within the City of Milwaukee, except such buildings as are owned or occupied by the United States, shall be equipped with a proper flushing system. All such toilets and water-closets shall have sewer connections, and shall be placed upon a base of some material impervious to water, which base shall have an area of at least four (4) square feet. Each water-closet shall be enclosed by partition at least six (6) feet in height.

Sec. 2. The use of the latrine system of water-closets and toilets in such buildings shall be allowed only at the discretion of the Commissioner of Health. Such systems shall be automatically flushed at least once in five (5) minutes, and shall be enameled or lined with a non-deteriorating surface impervious to water, and equipped with seats fitting the bodies of the persons using them.

Sec. 3. All urinals in such buildings shall be constructed of a material impervious to water, with a non-deteriorating inner surface, and shall be built upon a raised platform of material impervious to water, which

platform shall be at least four (4) inches higher than the surrounding floors, and shall extend forward to a distance of at least two (2) feet from the water distributing portions of said urinals. Such urinals shall be flushed continuously, or at intervals of not more than five (5) minutes.

Sec. 4. All toilet-rooms in such buildings shall be completely enclosed so as to be distinct and separate rooms, and shall be provided with proper ventilation to the outside air. In no case shall ventilation into a workroom or other part of the building be permitted. All such toilet-rooms shall have a window area equal to at least three (3) square feet for each fixture in such room, and closet-bowls and urinals are to be considered fixtures under this provision. There shall be separate toilet-rooms and water-closets for the different sexes in all such buildings, and each such room or closet shall be clearly marked to indicate by which sex it shall be used, and no person shall be allowed to use any toilet-room assigned to the other sex. In all buildings within the city where eight (8) or more persons are employed, at least one toilet shall be supplied for each twenty (20) persons employed in the building. All toilet-rooms, toilets and water-closets shall be kept in a clean and sanitary condition at all times.

Sec. 5. The Commissioner of Health is authorized and empowered to order such changes in the location or construction of toilets, toilet-rooms and water-closets in any such buildings as in his opinion may best serve the interests of sanitation, and any person failing to comply with an order of the Health Commissioner given under this section shall be subject to the penalty prescribed in Section 6 of this ordinance.

Sec. 6. Any owner, lessee, or any person or corporation having charge of any of the aforesaid buildings, who shall violate any of the provisions of this act, shall forfeit to the City of Milwaukee a penalty of not less than ten dollars (\$10.00) nor more than one hundred dollars (\$100.00) for each and every offense, and in default of payment thereof shall be imprisoned either in the County Jail or the House of Correction for Milwaukee County not less than five (5) days nor more than thirty (30) days.

Sec. 7. All ordinances or parts of ordinances contravening the provisions of this ordinance are hereby repealed.

Sec. 8. This ordinance shall take effect and be in force from and after its passage and publication.

Passed Nov. 6, 1911.

File Number 3046

89—AN ORDINANCE

To Regulate the Moving of Buildings.

The Common Council of the City of Milwaukee do ordain as follows:

Section 1. No person, firm or corporation, its servants or agents, shall move or cause to be moved, any building or structure, or any part thereof, without applying for and obtaining a permit from the Inspector of Buildings, and without also obtaining a permit from the Commissioner of Public Works if any sidewalk, alley, street, highway or other public ground is to be occupied in such moving.

Sec. 2. An application for a permit shall show the construction at the present time, its use and location, also the new location, with diagram of the lot showing the new location, and any existing building thereon, the sub-structure that it is to be placed upon, the use intended in the future, and the route to be traversed in the moving.

Sec. 3. In case a permit is required from both the Inspector of Buildings and the Commissioner of Public Works, such permit shall not be valid and in force until obtained from both departments and until all other preliminary requirements of the city ordinances pertaining to the moving of buildings upon the public streets are complied with.

Sec. 4. No permit shall be granted for the moving of any structure that has deteriorated or been damaged from any cause 50% or more of its original value. No permit shall be granted for the moving of any structure within the fire limits or from the outside to the inside of the fire limits, unless the building is of a con-

struction and kind permissible for new buildings for the purpose for which it is intended to be used within the fire limits.

A permit may be granted for the moving of a wood or veneered building on the same premises within the fire limits provided that its height is not increased, and further, that no building originally used for dwelling purposes before such moving shall be altered except for office purposes.

Sec. 5. Any person, firm or corporation, servant or agent moving any building in violation of the provisions of this ordinance, or any person who shall assist in the violation or shall fail to comply with any of the provisions of this ordinance, or shall move any building in violation of any detailed statement of application, plans and specifications submitted or approved thereof, provided such detailed statement or plans as accepted are according to the provisions of this ordinance, and in case it is not, it shall be no defense to any violation of this ordinance that such plans or any part thereof were accepted by any officer of the City of Milwaukee or passed upon with approval thereof, or any building permit issued thereunder subject to the above provisions, shall for each and every such violation or non-compliance for each and every day thereof be liable to a fine of not less than Ten (10) Dollars nor more than Five Hundred (500) Dollars or in default of fine by imprisonment in the house of correction of Milwaukee County not more than six (6) months.

Sec. 6. All ordinances or parts of ordinances contravening the provisions of this ordinance are hereby repealed.

Sec. 7. This ordinance shall take effect and be in force from and after twenty days following its passage and publication.

Passed August 4, 1913.

AN ORDINANCE

Regulating the Construction and Equipment of Garages.

The Mayor and Common Council of the City of Milwaukee do ordain as follows:

Section 1. A "garage" is—

A building or that portion of a building in which a vehicle or vehicles, using or carrying volatile inflammable liquids for fuel or power, is or are kept for use, repair, rental or live storage, or for demonstrating purposes, and any part of said building that is not separated therefrom by unpierced fire walls, floors and ceilings.

Nothing in this section shall be construed to mean places where automobiles are kept when drained, solely for exhibition or sale purposes, or dead storage.

Sec. 2. An "automobile" is a self-propelled vehicle.

Sec. 3. An automobile carrying a volatile inflammable liquid shall not be placed—

(a) In a building of wood which shall be more than fifteen feet high, used for more than four automobiles, or located less than ten feet away from any other building.

(b) In a building, any portion of which, outside of the garage, is used as a place of assemblage or employment for persons at any time, other than employees of the garage, which portion is not separated from the garage by unpierced fire walls, floors and ceilings.

(c) Nothing herein contained in this section shall prevent the owner of any existing garage from keeping not more than two automobiles for his own use in a portion of a building; nor for anyone occupying a part of such building as a dwelling. Garages hereafter erected, any portion of which is used for dwelling purposes, shall be subject to all the provisions of this ordinance.

Fire Resisting Construction.

Sec. 4. A garage must be of fireproof construction if intended for the use of more than four automobiles; if built within five (5) feet of a boundary line between premises or within ten (10) feet of any other building; where any persons are assembled or employed other

than employes of the garage, and in all such cases the floors, ceilings and walls must be unpierced. Enclosing walls within five (5) feet of any other building, or within five (5) feet of a boundary line between premises shall have no openings; all openings in walls shall have fire doors or windows, but these requirements shall not apply to openings in front walls on the street line where such street in thirty (30) feet or more in width. All exterior walls, abutting on a street, alley or lot line, of any building used as a garage shall have parapet walls carried to at least two feet above the roof, and shall be coped with incombustible material.

In lieu of fireproof construction a one story garage may be built of incombustible material provided that the floor area does not exceed 360 square feet and the height does not exceed fifteen feet measured from the floor to a point two-thirds of the height of the roof, and that such garage does not form a part of any building and is not contained in any other building; such garage shall not be built less than one foot from a boundary line between adjoining premises or any frame building and not more than one such garage shall be built on any twenty-five foot frontage of a lot. The walls and roof of such incombustible garage may consist of corrugated iron not lighter than twenty gauge U. S. standard, covered with a rust resisting coating, fastened to a steel frame work, or may consist of cement plaster of not less than two inches solid thickness on metal lath with metal frame. The floor in all cases shall be of incombustible material and the doors shall be of metal or metal covered wood and the windows and sash shall be of metal with wire glass.

Tanks.

Sec. 5. Storage tanks shall—

(a) Not be installed until application, with plans and specifications showing full details of location and construction of tank and all connections have been filed with and approved by the Inspector of Buildings. If in conformity with all the provisions of this ordinance a permit shall be issued.

(b) Any person, firm or corporation installing any

gasoline tank shall notify the Inspector of Buildings before covering or enclosing same, and said Inspector of Buildings shall have an inspection made of such tank and connections and same must not be covered up or enclosed before inspected.

(c) Not be placed upon or under any street, or any part of highway or alley or sidewalk.

Under any building any part of which is used for a residence, hotel or lodging purposes or place of assemblage.

Not have a capacity in excess of 300 gallons.

Be made of iron or steel galvanized of at least number twelve (12) United States standard gauge.

Be coated on the outside with rust-resisting material.

Have joints tightly riveted, calked, soldered, brazed or welded.

Be tested by hydrostatic pressure to twenty-five (25) pounds to the square inch.

Have all pipe connections at the top, and no vent or filling pipes to drop lower than the top of the tank.

Be buried entirely so that no part of the tank is less than two feet under the surface of the ground. Tanks that are to be filled by a pipe from the street shall be buried at least two feet lower than the surface of the street or gutter.

Tanks in the ground that are within five (5) feet of any building shall, if required, be buried two (2) feet lower than the level of the lowest floor of any such building.

Tanks may be placed below lowest floor of building and shall be covered entirely with two (2) feet of earth, and covered with a concrete slab at least six (6) inches thick on top, and such tank shall be equipped with separate fill and vent pipe extending to the outside of the garage or building.

(d) No tank shall be installed until application with plans and specifications showing full detail of location and construction of tank and of connections has been submitted to the Inspector of Buildings, who shall have a reasonable time thereafter to examine said plans, and who shall give a permit after the applicant has paid into

the city treasury the sum of two dollars (\$2.00) as a permit fee for the installation of each tank, which sum or sums shall be credited to the general city fund, if said plans are according to this ordinance and other ordinances which may be applicable thereto, and the giving of a permit by the Inspector of Buildings in violation of this or any other ordinance shall not be a defense to a violation of any of the provisions herein named. Any person, firm or corporation installing gasoline or volatile liquid tanks pursuant to this ordinance, shall again notify the Inspector of Buildings before covering or enclosing the same, and he shall cause an inspection to be made of the same and connections, and the same shall not be covered up or used before they are approved by the Inspector of Buildings as fulfilling the requirements of this ordinance, but such approval by the Inspector of Buildings shall not be considered a defense to a violation of any of the provisions of this ordinance.

No garage shall contain more than—

Five gallons of volatile inflammable liquid in safety cans (automobile equipment excepted) and six hundred (600) gallons (ten (10) barrels) of volatile inflammable liquid in underground storage tanks.

Safety cans for storing volatile inflammable liquids in a garage shall be made of metal, shall have a screw top, and shall have a capacity not to exceed five (5) gallons, and when not in use shall be placed in drip pans.

When a portable filling tank is used for the storing or handling of volatile inflammable liquids, this tank must be of a capacity not to exceed sixty (60) gallons and must be made of at least three-sixteenth ($\frac{3}{16}$) inch steel construction.

The said portable tank shall be supported on wheels, the same being equipped with rubber tires and be provided with a suction pump. This pump must be provided with hose attachment; the hose must not exceed eight (8) feet in length. The pump must be equipped with ground key shut-off cock where hose is attached to pump, also with approved ground key shut-off cock at the end of the hose. Pump must be equipped with con-

venient lock and the same must be locked when not in use.

No portable filling tank shall be allowed standing on public walks or public driveways when not in immediate use for filling automobiles.

The Vent Pipe.

Sec. 6. The vent pipe for storage tanks shall be—

(1) Made of one inch or larger wrought iron pipe, with

Heavy cast fittings, and screw joints made with litharge and glycerine.

Connected with the top of storage tank, and to be provided with a screw of thirty (30) mesh brass wire at or near the tank connection.

(2) Carried up to the outer air, well braced in position and—

Capped with a double goose-neck or return bend with openings at least two feet higher than the roof of garage or building, and be covered with a brass wire of one-sixteenth ($\frac{1}{16}$) inch mesh or so arranged that the filling pipe cannot be opened without opening the vent.

The opening of vent pipe for storage tanks (not exceeding a capacity of three hundred (300) gallons) outside of the garage or building shall be

Directly over the storage tank.

Covered by a screen of thirty (30) mesh brass wire.

Closed by a screw cap when not in use, and

Enclosed in a metal box, with a cover that is flush with the surface of the ground if on public highway, and is kept locked when not in use.

The Filling Pipe.

Sec. 7. The filling pipe for storage tanks shall be—

Made not less than one and one-fourth ($1\frac{1}{4}$) inch or larger wrought iron or steel pipe with heavy cast fittings, and

Screw joints with litharge and glycerine and be provided with screen of thirty (30) mesh brass wire.

One at the tank connection or near the tank connection, and

One below the filling cock or valve.

Filling pipe to extend to the outside of the garage and

when onto public highway to be buried at least two (2) feet under ground; intake enclosed in a metal box, with a cover that is flush with the surface of the ground and securely locked when not in use; intake shall be closed with a screw cap.

Connection with top of tank or with valve connected therewith, and extend down to the bottom of the storage tank.

Laid at a uniform grade so that it will drain empty into the tank.

Pumps.

Sec. 8. All volatile inflammable liquids must be drawn from the tank by means of a suction system or pump, which shall have a shut-off with ground keyway on the nozzle and automatic check thereon between the pump and the nozzle.

Heating.

Sec. 9. No stove, furnace, fire or fire heat shall be used or allowed—

In a garage or

In any portion of the building or below the topmost floor of the garage that is provided with any opening from the garage, and not separated from the same by unpierced fire-walls, floors and ceilings.

Carbide.

Sec. 10. There shall not be more than six hundred (600) pounds of calcium carbide in air-tight containers in any garage; said carbide in no case shall be placed in a cellar, but only on the floor above the basement and shall be placed six (6) inches or more above the floor.

Lighting.

Sec. 11. Movable incandescent electric lights in a garage shall be protected by metal cages, and shall be fitted with keyless sockets. All electric switches and plug receptacles shall be permanently located at least four (4) feet above the floor, and all switches and safety fuses shall be grouped and placed within a fireproof cabinet.

Electric charging apparatus shall not be installed in a garage, but may be kept in separate room where there

is no inflammable substance; said room to be protected by unpierced fire-walls. No open frame shall be placed less than seven (7) feet above the floor.

Smoking.

Sec. 12. Smoking is absolutely prohibited in any room or place in which a volatile inflammable liquid is kept, or in any room, or hall opening into such room or place. A notice in large letters, "No Smoking," shall be displayed and in all places in which a volatile inflammable liquid is kept.

Inflammable Liquids.

Sec. 13. No volatile inflammable liquid shall be—

(a) Used in a garage for cleaning or for any other purpose whatsoever, other than filling tanks of automobiles.

(b) Allowed to run upon the floor or to fall or pass into the drainage system of the garage.

(c) Put into or removed from the tank of an automobile while any light or fire on the same is burning.

(d) Carried or kept in an open vessel.

Sand.

Sec. 14. Sand shall be kept to the amount of five hundred (500) pounds, in boxes provided with hand scoops or fire-buckets, in appropriate places for immediate use for fire extinguishing purposes only, and shall also be kept in convenient receptacles for use in absorbing any waste oil.

Waste Cans.

Sec. 15. Self-closing metal cans set firmly on four-inch legs shall be kept on all floors, for the purpose of holding all inflammable waste material.

Limit of Time to Conform.

Sec. 16. On and after its passage and publication, this ordinance shall rescind and replace any and all existing ordinances having to do with the construction, location and operation of garages, but this ordinance shall not apply as to construction of any garage heretofore built and in use except as to changes desired. The maintaining after building contrary to this ordi-

nance shall be unlawful and each and every day of such maintenance shall be considered a separate offense. This ordinance shall apply to additions on old buildings.

Consent of Property Owners.

Sec. 16a. It shall not be lawful for any person to locate, build, construct, or keep in any block a garage if in such block two-thirds of the buildings are devoted to exclusive residence purposes on both sides thereof, unless the written consent of the property owners on both sides of the street or alley in such block shall first be obtained and filed with the Inspector of Buildings before application for a permit be made.

Violation and Penalty.

Sec. 17. Any person, firm or corporation owning, controlling or managing any building or premises wherein or whereon anything in violation of this ordinance shall be placed, or shall exist, and any person employed who shall assist in the commission of any such violation, and all persons who shall violate any of the provisions of this ordinance or fail to comply therewith, or any requirements thereof, who shall build in violation of any detailed statement of specifications or plans submitted or approved thereunder, or any certificate or permit issued thereunder, shall for each and every such violation or non-compliance be fined not less than fifty (\$50) dollars nor more than five hundred (\$500) dollars, or in case of failure to pay by imprisonment in the House of Correction for Milwaukee County not less than fifteen (15) days nor more than six (6) months.

Sec. 18. This ordinance shall take effect and be in force from and after the date of its passage and publication.

The foregoing ordinance passed January 11, 1911.

Includes amendments passed—

May 22, 1911.

August 28, 1911.

January 2, 1912.

January 8, 1912.

File Number 5771.

183—AN ORDINANCE

To Regulate the Construction of Apartment Houses, Tenement Houses, Boarding and Lodging Houses.

The Mayor and Common Council of the City of Milwaukee do ordain as follows:

Section 1. An apartment or tenement house in the meaning of this ordinance, is any house or building or portion thereof, which is rented, leased, let or hired out to be occupied as a home or residence of three or more families living independently and doing their cooking or having facilities for doing their cooking upon the premises, and having a common right in the stairways, yards and water closets or some of them.

A lodging or boarding house is any house or building or portion thereof, in which six or more persons are harbored, received or lodged for hire, or any building or part thereof which is used for six or more persons not members of the family, to sleep in or occupy as a lodging.

An apartment is a room or suite of rooms occupied or designed to be occupied as a family domicile.

A yard is an open, unoccupied space on the same lot with a tenement, lodging or boarding house, between the rear line of the house and the rear line of the lot.

A court is an open, unoccupied space other than a yard, on the same lot with a tenement, lodging or boarding house. A court entirely surrounded by a house or building is an inner court. A court bounded on one side and both ends by a house or building and on the remaining side by a lot line is an inner lot-line court. A court extending to a street, alley or yard, is an outer court. A court with one side on a lot line and opening to street or yard or both is an outer lot-line court.

A shaft includes exterior and interior shafts, whether for light, air, elevator, dumbwaiter or any other purpose. A vent shaft is one used solely to ventilate or light a water closet compartment, bath room or passage-way.

A public hall is a hall, corridor, or passage way not within an apartment.

A stair hall includes the stairs, stair landings, those portions of the public halls through which it is necessary to pass in getting from the entrance floor to the roof, and the enclosing partitions.

A basement is a story partly, but not more than one-half its height, below the level of the lot.

A cellar is a story more than one-half its height below the level of the lot.

An attic is an enclosed portion of a building above the top story and is not to be construed or counted as a story.

The expressions "fireproof" and "fireproof construction" wherever herein used, mean a construction of walls, piers, partitions, floors, roof and stairs in which no wood or other inflammable material is used, in which the several structural parts are made of hard, incombustible, fire-resisting materials and in which all structural parts of steel and iron are thoroughly protected from fire by an ample covering of such fire-resisting material. A fireproof tenement, lodging or boarding house is one of fireproof construction. But this definition shall not be construed as prohibiting elsewhere than in stair halls or entrance halls, the use of wooden flooring on top of the fireproof floors or the use of hardwood rails to stairs.

Where a grade in the street or lot adjacent to a tenement, lodging or boarding house varies, the mean or average grade of such street or lot shall be considered the grade of such street or lot.

A lot line is the boundary line on either side of the proposed building premises to be indicated as such on the lot diagram, and a lot is such building premises open and unoccupied by any other building.

Sec. 2. Every apartment house, tenement, lodging or boarding house hereafter erected, five stories or more above cellar or basement, shall be of fireproof construction.

Sec. 3. In every non-fireproof, as well as fireproof tenement, lodging or boarding house, three stories or more in height, exclusive of cellar, the floor of first story above the cellar including all supports, also partitions in cellar shall be of fireproof construction.

Sec. 4. The stair halls in all non-fireproof as well as fireproof tenement houses shall be constructed as in this section specified. In every apartment house, tenement house, boarding or lodging house, which either is occupied or is arranged to be occupied by more than two families on any floor, or which is four stories and cellar in height, the stair hall shall be constructed of fireproof material throughout. In apartment, tenement houses and boarding and lodging houses three stories and cellar in height, and which also are not occupied or so arranged to be occupied by more than two families on any floor, the stair halls shall be made of fireproof or open mill construction. Enclosing partitions shall be either fireproof or filled with incombustible material.

Sec. 5. All shafts constructed in apartment houses, tenement, lodging and boarding houses, shall be constructed fireproof throughout. No elevator shall be built in the well-hole of the stairs but shall be enclosed in separate fireproof shaft.

Sec. 6. No apartment house, tenement, lodging or boarding house shall hereafter be erected or enlarged upon or moved onto any lot so as to occupy more than ninety per cent of a corner lot, or more than seventy-five per cent of any other lot, provided that the space occupied by fire escapes shall not be deemed a part of the lot occupied.

Sec. 7. Behind every apartment house, tenement, lodging or boarding house hereafter erected or enlarged upon or moved onto any lot which does not extend from the street to an alley, there shall be a yard extending across the entire width of the lot at every point from the ground to the sky unobstructed, except that fire-escapes or unenclosed outside stairs may project not over four and one-half feet from the rear line of the house; and the depth of said yard measured from the extreme rear wall of the house to the rear line of the lot shall be as follows: The depth of the yard behind such house hereafter erected upon a corner lot shall not be less than ten feet in every part, provided that where such lot is less than one hundred feet in depth, the depth of the yard shall not be less than ten per centum of the depth of such lot, but shall never be less

than five feet in every part. The depth of yard behind apartment, tenement, boarding or lodging houses built on other than corner lots measured from the rear line of any part of such house to the center line of the alley, if there is an alley, or the rear line of the lot, where there is no alley, shall be equal to at least one-fourth of the height of such building above the ground level, but in no case shall it be less than ten feet.

Sec. 8. No apartment, tenement, lodging or boarding house shall be erected upon or moved onto the front of any platted lot or other parcel of land abutting upon but one street, where there is another building upon the rear of the same lot or parcel, or upon the rear of any such lot or parcel where there is another building upon the front of the same unless there be between such building a clear, unobstructed space at least fifteen feet in width, if either building be two stories in height, and at least twenty feet in width, if either building be three stories high, and at least twenty-five feet in width if either building be over three stories high.

Sec. 9. No apartment, tenement, lodging or boarding house shall have vent shafts, except for the purpose of lighting or ventilating water closet or bath room compartments or passage ways.

Sec. 10. No outer lot line court measured from the lot line to the wall of the building, shall be less than three feet for buildings two stories or less in height. For buildings more than two stories in height, the width of such court shall increase one foot for each additional story.

Where an outer court is situated between wings or parts of the same building or between different buildings on the same lot the width of said court measured from wall to wall shall not be less than eight feet in any part, provided the court does not exceed thirty-six feet in length, in all buildings four stories or less in height; for each additional story in height such court shall increase one foot in width; and for each additional ten feet or increase or fraction thereof in length of such court, the entire width shall be increased one foot, and the increase in width shall be cumulative.

No inner lot line court shall be less than six feet in

width, nor less than sixty square feet in area of unobstructed space for courts two stories or less in height; no inner court shall be less than ten feet in width nor less than one hundred and fifty square feet in area for courts two stories or less in height; and for every additional story every such inner court or inner lot line court shall be increased in size by at least one linear foot in its length and one linear foot in its width.

No court or vent shaft shall be covered by a roof or sky-light but shall be open and unobstructed from the bottom thereof to the sky. No fire escape or stairway shall be constructed therein unless the court be enlarged proportionately, and have direct exit outside of the building.

At the bottom of every shaft or inner court there shall be a sufficient access to such shaft or court as to enable it to be properly cleaned out. All such inner courts shall have an intake for fresh air, leading from a street or yard, the area of which intake in square feet shall equal two one-thousandths of the number of cubic feet contained in said court.

No building shall hereafter be altered or enlarged to encroach upon the space reserved by law for light and air, on lots or parcels of ground on which such apartment house, tenement house, lodging house or boarding house is erected.

A corner lot is a lot which abuts on two streets.

Sec. 11. In every apartment house, tenement, lodging or boarding house, every room except water closet compartments and bath room shall have at least one window opening directly upon the street or upon a yard or court. The total window area in such room shall be at least one-tenth of the superficial floor area of the room and the top of at least one window shall be not less than seven feet above the floor and the upper half of it shall be made so as to open the full width. No building shall be converted into, used or leased for a tenement, lodging or boarding house, unless every such room thereof used for such purpose shall have a window opening directly upon a street, yard or court; nor shall any building or part thereof constructed and used for a different purpose, be remodeled so

as to convert it into a tenement house, unless so remodeled as to comply with the requirements of this section.

Sec. 12. In every apartment house, tenement, lodging or boarding house one at least of the windows provided to light each public hall or part thereof, shall contain not less than ten square feet of glass area. In every such house three or more stories in height where the stairs of public halls are not provided with windows on each floor opening directly to the outer air, there shall be directly over each stairwell a ventilating skylight with ridge or gable ventilators having a minimum opening of forty square inches, or such skylight shall be provided with fixed or movable louvers. The glazed roof of such skylight shall be not less than twenty feet in area.

Sec. 13. In every apartment house, tenement, lodging or boarding house there shall be adequate chimneys running through every floor with an open fire place or grate, or place for a stove properly connected with one of said chimneys for every apartment, unless the apartment is heated by a furnace, hot water or steam and provisions are made in cooking by gas or electricity.

Sec. 14. No room in cellar or basement of any apartment, tenement, lodging or boarding house shall be constructed, altered, or occupied for living purposes unless all the following conditions are complied with; such rooms shall be at least eight feet high in every part from the floor to the ceiling; the ceiling of such room shall be at least four feet above the level of the lot; such room shall have a window or windows opening upon a street, yard or outer court and the total window area shall be at least one-tenth the superficial floor area of the room; one-half of sash of such window shall be made to open the full width; the walls and floor of such room shall be damp-proof and water-proof, and fit for human habitation as determined by the Inspector of Buildings.

Sec. 15. In every apartment house, or tenement there shall be a separate water closet in a bath room or separate compartment within each apartment, provided

that there are apartments consisting of but one or two rooms there shall be at least one water closet for every two apartments.

For every tenement house heretofore erected there shall be provided at least one water closet for every two apartments, provided that the total number of persons in such two apartments does not exceed eight; where the total number of persons exceeds eight there shall be a separate water closet for each apartment.

In every lodging or boarding house there shall be provided at least one water closet for every eight persons, and for each additional eight persons or fraction thereof there shall be at least one additional water closet.

Every water closet and bath room compartment in every apartment house, tenement house, lodging or boarding house hereafter constructed shall have a window at least three square feet in area, opening upon a street, yard, court or upon a vent shaft not less than twenty-one square feet in area; and every water closet and bath room compartment in every apartment house, tenement, lodging or boarding house heretofore erected shall receive compartment ventilation by such windows or by a proper metal or masonry ventilating pipe running up to and above the roof, with a sectional area of at least one square inch for every six cubic feet of space contained in such apartment, but no such vent pipe shall be less than thirty-six square inches in area. Every water closet compartment in every tenement, lodging or boarding house shall be provided with proper means of lighting the same. All water closets shall be kept in repair and drip trays shall not be permitted.

All apartment houses, tenement houses, lodging or boarding houses, not so situated as to be accessible to the sewerage system of the city, shall be provided with privy vaults constructed as follows: The vaults shall be outside of said building and sunk in the ground not less than six feet and shall be walled up with concrete or brick or stone laid in cement mortar with bottom of the same material, shall be rendered watertight, and shall be so constructed that the outside shall be at least two feet from the line of all adjoining lots,

and also the same distance from every street and alley. The vaults shall be carried one foot above the surface of the ground and shall be built to exclude all water from surface or from roofs of buildings. Such privies shall be repaired or cleaned on the order of the Inspector of Buildings.

Sec. 16. Every apartment house, tenement house, lodging or boarding house shall have water furnished in sufficient quantity at one or more places on each floor occupied by one or more families, provided the said apartment, tenement, lodging or boarding house is located on a street or alley supplied with city water pipes. When said building is not so situated a sufficient supply of wholesome water shall be provided on a part of the lot where it will not be contaminated from closets, barns, garbage or other sources of impurity.

Sec. 17. Before the erection, construction or alteration, except minor repairs, of any apartment house, tenement house, boarding or lodging house, or any part of such building, or the excavation of any cellar therefor is commenced, the owner or lessee, or agent or either, or the architect or builder employed by such owner or lessee in connection with the proposed erection or operation, shall apply to the Inspector of Buildings for a permit to do such work. The application for such permit shall state the exact site to be occupied and indicate by diagram the dimensions thereof and location of the building thereon, and state the materials to be used, the dimensions and estimated cost of the proposed building and the probable time to be occupied in the completion. The application shall be accompanied by a detailed statement of the specifications, a full and complete copy of the plans of such proposed work and the structural detail drawings of such proposed building as the said officer may require, and a written statement giving the full name and residence, street and number, of the owner or each of the owners of such proposed building, also the name and residence of the architect and contractor. Said statement and specifications and copy of plans, shall, if approved, be kept on file in the office of the Inspector of Buildings, and the erection, construction or altera-

tion of such building shall not be commenced or proceeded with until such statement and plans shall have been so filed and a permit issued by such Inspector of Buildings, and when proceeded with, the erection, construction or alteration of such building shall be carried on in accordance with such approved detailed statement of specifications and copy of plans and not otherwise. If the detailed statement of specifications and copy of plans indicate that the building contemplated will not in all respects be in accordance with the requirements of this ordinance, the Inspector of Buildings shall refuse to issue a permit until said specifications and plans shall have been made to conform in every respect with the requirements of this ordinance.

Sec. 18. Any person, firm or corporation owning, controlling or managing any building or premises, wherein or whereon anything in violation of this ordinance shall exist or shall be placed, or any person, firm or corporation employed who shall assist in the commission of any violation of any of the requirements hereof, or who shall build contrary to the plans, or specifications submitted to the Inspector of Buildings, provided such plans and specifications are in accordance with this ordinance, or any person, firm or corporation who shall neglect to do each and every act required herein, whether such act has been approved by the Inspector of Buildings or not, and the fact that the plans and specifications are accepted by the Inspector of Buildings shall be no defense to a violation of any of the provisions of this ordinance, shall for each and every day's violation or non-compliance be liable to a fine of not less than five (5) dollars nor more than five hundred (500) dollars or in default of fine by imprisonment in the house of correction not less than one day nor more than six months.

Sec. 19. All parts of ordinances contravening the provisions of this ordinance are hereby repealed.

Sec. 20. This ordinance shall take effect and be in force from and after twenty days following its passage and publication.

Passed Nov. 10, 1913.

100—AN ORDINANCE

Regulating the Construction of Stables and Structures.

The Mayor and Common Council of the City of Milwaukee do ordain as follows:

Section 1. No person, firm or corporation shall construct or establish any stable or structure, to be used for the keeping or housing of domestic animals, at a less distance than fifteen (15) feet from any residence, dwelling or place of assemblage.

The floor of all stables or rooms used for such purposes shall be made of material impervious to water and shall be drained by connecting with the City sewer.

Sec. 2. Any stable or structures to be used for the keeping or housing of horses, mules or cows, shall be provided with ventilators leading through the roof with an area not less than sixteen (16) square inches for each animal.

Sec. 3. Any stable or structure in which manure or stable refuse accumulates, shall be provided with a watertight box, bin or pit, located within the premises on which such stable or structure is situated. Said box, bin or pit shall be ventilated by means of a flue or duct having a cross sectional area of not less than twelve (12) square inches, and extending above the roof of such stable or structure. Said box, bin or pit shall at all times be securely covered, except when opened during the time of depositing or removing the manure or refuse.

Sec. 4. Any person, firm or corporation, servant or agent constructing or altering any building in violation of the provisions of this ordinance, or any person who shall assist in the violation or shall fail to comply with any of the provisions of this ordinance, or shall construct or alter any building in violation of any detailed statement of application, plans and specifications submitted or approved thereof, provided such detailed statement or plans as accepted are according to the provisions of this ordinance, and in case it is not it shall be no defense to any violation of this ordinance that such plans or any part thereof were accepted by any officer

of the City of Milwaukee or passed upon with approval thereof or any building permit issued thereunder subject to the above provisions shall for each and every such violation or noncompliance for each and every day thereof be liable to a fine of not less than ten (10) dollars nor more than five hundred (500) dollars, or in default of fine by imprisonment in the House of Correction of Milwaukee county not more than six months.

Sec. 5. All ordinances or parts of ordinances contravening the provisions of this ordinance are hereby repealed.

Sec. 6. This ordinance shall take effect and be in force from and after twenty days following its passage and publication.

Passed August 4, 1913.

File Number 4969

115—AN ORDINANCE

Regulating the Construction of Sheds.

The Mayor and Common Council of the City of Milwaukee do ordain as follows:

Section 1. Enclosed shed for the storage of fuel, vehicles, except automobiles and others using volatile liquids for a means of power, and garden utensils, and arbors may be built of wood construction within the fire limits; they shall not be more than one (1) story or twelve (12) feet in height and not more than two hundred (200) feet in area; such sheds shall be located at least fifteen (15) feet from the street line of the lot and on the rear half of such lot, and there shall not be more than one (1) such shed built to any twenty-five (25) feet frontage of such lot.

Sec. 2. Open shelter sheds one (1) story and not exceeding fifteen (15) feet in height, nor more than 1,000 feet in area may be built of wood construction within the fire limits, and shall not have any floors of combustible material. No such shed shall be built within ten (10) feet of adjoining premises.

Sec. 3. Any shed for the storage of minerals or coal in bulk, if more than twenty-five (25) feet from any other building or the adjoining premises and not more than

thirty (30) feet in height, nor more than 15,000 feet in area, may be built of wooden construction within the city limits, the roof of such shall be covered with fire-resisting material.

When such shed exceeds the above regulations it shall be built entirely of fire-resisting construction, or may be of wood construction, but shall have a dividing wall of fireproof construction, so that no compartment of such shed exceeds the first mentioned area.

Sec. 4. Shed for the storage of combustible material may be built of frame construction within the city limits if more than twenty-five (25) feet from the adjoining premises or any other building, if not more than twenty (20) feet in height and if the area of same does not exceed five thousand (5,000) square feet. The roof shall be covered with fire-resisting material. If such shed is enclosed with fire-resisting material, the area may be increased to ten thousand (10,000) square feet; whenever such shed exceeds ten thousand (10,000) square feet, there shall be dividing walls of fireproof construction for each compartment over ten thousand (10,000) square feet area.

Sec. 5. Buildings for the storage of ice within the city limits may be of frame construction, but shall not exceed forty-five (45) feet in height, nor ten thousand (10,000) feet in area, when not less than twenty-five (25) feet from adjoining premises or any other building, but when exceeding such regulation they shall be built of fire-resisting material; and when of a greater area than ten thousand (10,000) square feet they shall have dividing walls of fireproof materials.

Sec. 6. Elevators for the storage of grain in bulk located within the city limits shall be of fireproof construction if more than thirty (30) feet in height or have a floor area exceeding five thousand (5,000) square feet.

Sec. 7. Temporary buildings or structures for fairs, conventional exhibitions, festivals and similar purposes may be erected of frame construction, but shall be capable of withstanding a wind pressure of 30 pounds to the square foot and sustaining a live load of 125 pounds to the square foot on a factor of safety of four

(4). Such permit for temporary structure shall be for a period not to exceed six (6) months, and shall be torn down or removed within twenty-four (24) hours after such permit expires, or the use of the building for that particular purpose for which it was built has ceased.

Sec 8. Where division or enclosing walls are required they shall not be less than twelve (12) inches thick for the upper sixteen (16) feet and for each succeeding lower sixteen feet shall increase four (4) inches in thickness when these walls are not more than one hundred (100) feet in length and for each additional one hundred (100) feet or fraction thereof in length shall be increased four (4) inches in thickness, but in lieu of such additional thickness, such walls may have projecting piers or pilasters not over twenty (20) feet on centers of not less than twenty (20) inches thickness in 12 inch section, 28 inches thickness in 16 inch section, 36 inches in succeeding lower sections; the face of such projecting pilaster shall not be less than thirty-two (32) inches.

Reinforced concrete division or enclosing wall may be of four (4) inches less in thickness than as specified for brick, but shall not be less than eight (8) inches thick in any part, and shall have pilasters as for brick walls, and of such face and reinforcement to equal the strength of brick pilasters of the sizes given in preceding sections.

Sec. 9. One (1) story fireproof constructed sheds shall not be limited as to area or height.

Sec. 10. Corrugated or sheet iron shall not be considered as fireproof or fire-resisting material.

Sec. 11. All ordinances or parts of ordinances contravening the provisions of this ordinance are hereby repealed.

Sec. 12. This ordinance shall take effect and be in force from and after 20 days following its passage and publication.

Passed Sept. 2, 1913.

File Number 5778.

AN ORDINANCE

Regulating Privileges upon the Public Highway.

The Mayor and Common Council of the City of Milwaukee do ordain as follows:

Section 1. Permits. No person, firm, corporation or agent shall place, erect or attach any permanent or fixed construction or projection into a public highway except within the limitations stated hereafter and upon application to and obtaining a permit from the Inspector of Buildings. Any such permitted construction or projection is a privilege and cannot be claimed as a right. No construction shall be placed so as to prevent free passage over a public highway.

Sec. 2. Alterations. If any alterations are being made of parts of an existing structure that projects into the highway more than the limitations established by this ordinance, such projecting parts of the structure shall be made to conform in every respect with the provisions of this ordinance.

Sec. 3. Face of Wall. The face of any wall, first story show window, quoins, columns or pilasters shall not project into any street or alley.

Window sill shall not be allowed to project more than two (2) inches beyond the boundary line of the premises, and then only when not less than ten (10) feet above the grade.

The face of any riser or platform above the grade shall be kept within the limits of the boundary lines of the premises, and then only when at not less than ten (10) feet in clear between the grade of the sidewalk and the lowest point of any appendage or projection extending from any building into the street or alley.

Sec. 4. Oriel or Bay Windows or Cornices. Oriel or bay windows, balconies and front cornices or any parts of them shall not be less than ten (10) feet above the sidewalk where projecting into the street; but where such projections are into alley without sidewalk, they shall not be less than fourteen (14) feet above the established grade.

Main cornices shall not project into a street more than

five (5) feet nor more than two (2) feet into an alley except that the returns of such cornices at the corner of an alley will be permitted of a projection the same as in front for a length extending in the alley equal to three (3) times the projection. Subordinate cornices, belts or sill courses shall not project into a street more than two (2) feet nor more than one (1) foot into an alley.

Cornices shall be drained toward the building.

Sec. 5. Bay Windows. The face of any bay or oriel window shall not project more than two (2) feet, and their cornices not more than three (3) feet into any street or alley. There shall be no bay or oriel window in street or alley where such highway is less than twenty (20) feet in width.

Bay or oriel windows projecting into a street or alley shall not have a greater frontage than fifteen (15) feet and only one such bay or oriel window shall be permitted for every thirty (30) feet of front.

There shall be a distance of at least five (5) feet between two (2) such bay or oriel windows, and at least two and one-half ($2\frac{1}{2}$) feet from the dividing property line. The face of any bay or oriel window shall be kept within a line drawn from the intersection of a dividing property line and the street line, at an angle of twenty (20) degrees with the street line.

At the intersection of streets a corner oriel window may be built of not less than two (2) feet projection of its face into the street and not more than three (3) feet projection of cornices into the street, provided that the face of the oriel windows directly over the corner line of the lot shall not project beyond it.

Sec. 6. Balcony. A balcony shall not project into the street or alley more than four (4) feet over the extreme edge nor more than three (3) feet six (6) inches measured at the face of the railing, the railing shall have balustrade or open work not less than three (3) feet high and not more than four (4) feet high above the platform.

Such balconies shall be built entirely of incombustible materials and shall be drained towards the building.

Sec. 7. Doors. First story doors facing the street or

alley shall be so placed that they will not project into such street or alley when open.

Sec. 8. Fire Escapes. Fire escapes shall not project into the street or alley more than four (4) feet six (6) inches and no fixed part thereof shall be less than ten (10) feet above the sidewalk or less than fourteen (14) feet above an alley; balanced stairs suspended at the above levels shall connect the fire escapes with the street grade. Stand pipes and connections at the required height are permitted.

Sec. 9. Hitching Posts and Rings. Hitching rings shall not be placed on the top of the curb or sidewalks. Hitching posts not less than three (3) feet nor more than three (3) feet six (6) inches high and not less than three (3) inches nor more than six (6) inches thick may be placed on the sidewalk not nearer than six (6) inches to and not more than ten (10) inches from the outer edge of the curb.

Sec. 10. Clocks. Illuminated clock signs if indicating the correct standard time, will be permitted, provided that no part of same shall project beyond the curb line. No part of the support of a clock shall be less than eight (8) feet or more than twelve (12) feet high, and shall not be placed more than two (2) feet inside of the curb line. Such clock shall not measure more than four (4) feet in any horizontal direction and shall not have any name or advertising matter, except the words "correct standard time."

Sec. 11. Projections. Below the grade line the parts of a building projecting into an alley shall be limited to the sewer pipes and the footings.

Sec. 12. Stairways. In open stairways leading down below grade, risers shall not project into the street or alley.

Covered steps, stairways or other openings leading down below the grade, shall not project more than three (3) feet six (6) inches into the street when the sidewalk is more than twelve (12) feet wide and shall not project more than three (3) feet into the street when the sidewalk is twelve (12) feet wide or less.

The covering of such steps or other openings shall

consist of metal doors with metal frames, the doors and frames shall have a non-slippery surface and shall be placed even with the grade of the sidewalk. The doors shall be kept closed except when in actual use, and shall be securely fastened when closed.

Sec. 13. Metal Gratings. Metal gratings with open-surface placed even with grade will be permitted in a grates not more than $\frac{3}{4}$ of an inch wide with non-slippery sidewalk instead of doors.

Sec. 14. Vaults and Hollow Sidewalks. Vaults occupying the space under a sidewalk from the line of the premises to the curb line may be built by the owner of the property abutting such sidewalk. The application for a permit for a sidewalk vault shall be made upon an official blank signed by the owner of the abutting property, for which he shall pay a fee of ten (10) dollars for the first thirty (30) feet frontage or fraction thereof and five (5) dollars for each additional thirty (30) feet frontage or fraction thereof.

Such sidewalk vaults shall not interfere with any public work or improvement, and the City of Milwaukee, in granting to build such vaults, reserves the right at any time to construct under or within such vaults municipally owned utilities needed for the public service, and the owner shall vacate such vault space or its structural parts without cost to the city when so ordered by the Common Council by resolution or otherwise.

Sec. 15. Boilers, Engines, etc. Boilers, engines or machinery using steam, gas or explosive mixtures or tanks containing volatile inflammable liquid shall not be located in or under the public highway.

Sec. 16. Retaining Walls. Retaining walls built of brick, stone or plain concrete shall not be less than seventeen (17) inches at top and not less than thirty (30) inches at the bottom for a depth not exceeding ten (10) feet and for any additional depth the thickness at bottom shall not be less than one-third ($\frac{1}{3}$) the total height of such wall, but in all cases shall be of a strength to resist of the ground with a factor of safety of not less than four (4).

Reinforced concrete retaining walls shall be built to

withstand the pressure of the ground with a factor of safety of not less than four.

All such retaining walls shall be built on a foundation of not less than two (2) rows of piling, each pile shall be at least twelve (12) inches in diameter at its thinnest part and shall be driven to at least fourteen (14) feet below the footing of such retaining wall.

Before beginning the excavation for a hollow sidewalk, the earth of the street shall be protected from caving in by driving at least three (3) rows of sheet piling at the curb line, the entire distance of the excavation. Such sheet piling shall extend at least six (6) feet below the footing of the retaining walls. Where reinforced concrete walls are used, the vertical reinforcement shall extend at right angles into the concrete floor of such vault or hollow sidewalk at least five (5) feet.

The roof or top of the vault or hollow sidewalk shall be built of incombustible material and shall be capable of carrying a live load of 150 pounds per square foot with a factor of safety of not less than four. The sidewalk surface shall be at the grade established by the city. The top surface shall consist of cement concrete or other hard incombustible material, and shall be non-slippery. Glass for lighting subspaces may be used in the top surface if the single units are not over three (3) inches in diameter or containing not over nine (9) square inches and the frame containing the glass has non-slippery surface.

Sec. 17. Openings for Elevators. Openings in sidewalks for elevators or chutes will be permitted if such openings are not over eight (8) feet frontage and do not exceed in the direction of the width of the sidewalk more than one-third such width and not over six (6) feet, and are placed close to the curb line. These openings shall be covered with doors of the same kind as required for stairs or other openings in sidewalks.

Sec. 18. Other Openings. Other openings in sidewalks for coal holes or similar purposes of not more than six (6) square feet surface, located close to the curb line and not less than twenty (20) feet distance between centers will be permitted; a load of 150

pounds per square foot with a factor of safety of not less than 4; such frames and covers shall have a non-slippery surface; the covers may have openings for ventilation not over $\frac{3}{4}$ of an inch wide; they shall be securely fastened when not in use.

Sec. 19. The City of Milwaukee hereby shall have and does reserve the right to at any time in the future cause the person, firm or corporation to whom a permit was granted at his, her, its or their own cost and expense to remove such vault, hollow sidewalk or any such projection over or into any street or alley whenever the Common Council, by resolution or otherwise made, decide that the same is necessary; and should such person, firm or corporation fail, refuse or neglect to so remove such vault, hollow sidewalk or any such projection, the Commissioner of Public Works shall remove or cause same to be removed and the cost of such removal shall be charged to such property the same as other special assessments.

Sec. 20. Penalty. Any person, firm or corporation building in violation of any of the provisions of this ordinance or any person who shall assist in the violation or shall fail to comply with any provisions of this ordinance or who shall build in any detailed statement of application, plans or specifications submitted or approved thereof, providing such detailed plans as accepted are in accordance to the provisions of this ordinance and in case they are not, it shall be no defense to any violation of this ordinance that such plans or any part thereof were accepted by an officer of the City of Milwaukee or passed upon with approval thereof, or any building permit issued thereunder, subject to the above provisions, shall for each and every such violation or non-compliance for each and every day thereof be liable to fine of not less than ten (10) dollars, nor more than five hundred (500) dollars, or in default of fine, by imprisonment in the house of correction of Milwaukee County not more than six months.

Sec. 21. Repeal. All parts of ordinances contravening the provisions of this ordinance are hereby repealed.

Sec. 22. Take Effect. This ordinance shall take effect

and be in force from and after twenty (20) days following its passage and publication.

AN ORDINANCE

To Regulate the Equipment and Operation of Picture Machines; and the Construction, Alterations and Remodeling of any Building, and the Nature of the Premises Wherein the Same are Operated.

The Common Council of the City of Milwaukee do ordain as follows:

Section 1. By the term "picture machines," as used in this ordinance, is meant any device used to project upon a surface moving picture of any character which the public are admitted to view.

Sec. 2. No picture machine shall hereinafter be maintained or installed, nor shall any place where same is being exhibited, or operated, be maintained except in conformity with the provisions of this ordinance.

Sec. 3. Every picture machine installed shall be enclosed within a booth, the walls, floors and ceiling of which shall be constructed of incombustible material of not less than two (2) inches solid thickness, on rigid non-combustible supports.

Sec. 4. No substance of a combustible nature shall be permitted within such booth, except the films used in the operation of the machine.

Sec. 5. Each booth shall be provided with a metal pipe not less than 6 inches in diameter for ventilation purposes, and said pipe shall be extended outside of the building and be provided with a rotary fan driven by power; but, if such pipe is of not less than twelve inches diameter, no fan shall be required.

There shall also be provided a fresh air opening near the rear end of the booth in the floor, or near the floor of said booth and connecting with a metal duct of not less than 120 square inches area leading from the outside. These fresh air openings shall have a damper operated automatically by fusible link in case of fire, and a damper operated at the will of the operator; or a fireproof window of not less than 4 square feet connecting with

the outside air shall be provided, opening not less than one-half.

The entrance door in the booth shall be not more than two (2) feet in width and five (5) feet in height and not less than $\frac{3}{4}$ inch thick, and shall be metal clad, swing outward and close automatically. Two metal latches shall be provided, one twelve inches below the top and the other twelve inches above the bottom of the door, and shall be so connected that one operation opens both latches. The opening for the operator's view or through which the picture is projected shall be not larger than twelve inches by twelve inches, and shall be provided with metal clad door which closes by gravity and is held open by fusible links placed in series so arranged that one of the links is suspended directly over the film when it is in the slide of the apparatus, or so arranged as to be closed, except when held open by pressure of the operator or other device.

Sec. 6. All electric wiring in the booth shall be non-inflammably insulated. Each lamp connected with a picture machine shall be provided with a separate switch located within the booth, where there shall also be a switch controlling the lights in the exhibition room; there shall also be a separate system of lighting controlled by a switch located outside the operating booth, controlling red lights. One such lamp shall be placed at each exit with a sign, six inches wide and twelve inches long, marked "Exit," and shall be directly above said exits. The lights shall be kept lit during all the time such picture performances are in progress or on exhibition.

Sec. 7. Magazines shall be used for receiving and delivering the films during the operation of the machine. A shutter shall be provided and placed in front of the condenser of each machine, so arranged as to remain closed until held open by the pressure of the operator's foot or other device that will insure the immediate dropping of the shutter when operation of the machine is stopped. Films not in the machine shall be kept in metal boxes with tightfitting covers when within the booth enclosing the machine.

Every booth shall be supplied with two galvanized

iron buckets of not less than four gallons capacity each and kept filled with water for fire protection during the performance.

Sec. 8. No person under the age of twenty-one years shall operate or be permitted to operate any picture machine.

Sec. 9. No picture machine shall be maintained or installed in any building except such building has the walls containing the front entrance abut directly upon a public street, and also has exits upon two other public thoroughfares, or one other public thoroughfare and one open space not less than five (5) feet wide leading to a public thoroughfare.

Sec. 10. a. Stairways, passageways and doors shall have a width not less than ten inches for every fifty seats which they serve, but no stairway or passageway shall be less than four (4) feet wide and no door shall be less than three feet wide.

b. Stairways serving balconies or galleries shall connect the same directly with the outside entrance or lobby, and there shall be no opening connecting such stairways with the main floor of the auditorium.

c. Stairs shall have handrails on each side and shall not ascend more than eleven (11) feet without a landing, which shall not be less than the width of the stairs. Stairs shall have at least six risers between platforms, and no risers shall be placed on platforms. Risers shall not exceed seven and three-eighths inches in height, treads shall not be narrower than eleven inches from riser to riser, and no winders shall be allowed.

d. Aisles shall not be less than two feet ten inches in width at the narrowest point, at the raised platform or picture screen extending from same they shall be increased in width $\frac{1}{4}$ inch to each foot of the length of the aisle, or in lieu thereof a straight aisle the width of which shall not be less than the average width of the foregoing calculation, but no aisle shall be less than 3 feet 6 inches wide. Aisles along walls shall not be less than 3 feet wide.

e. Doors shall be so constructed that when open they shall not obstruct any portion of any other doorway

opening or passageway. Doors for ingress or egress shall open outward.

f. Each floor, balcony or gallery shall be separately provided with emergency exits and outside stairways which shall not be less than three feet in width, made of incombustible material, kept free from obstruction and incumbrances of any kind, the width of such emergency exits shall not be less than ten inches for every fifty persons.

g. Exit doors shall not be obstructed by draperies nor be fastened in any manner that will prevent them from being easily opened outward during the time such place is open to the public, and shall be so constructed and maintained that any person can at once open them from the interior.

h. Outside and inside stairs and passageways shall be supplied with an independent lighting system, with one light on outside of each exit and at least one light every 15 feet for stairway, incline or platform, which shall be in operation during the entire period such place is open to the public and until the audience has left the building.

Sec. 11. a. Not more than twelve seats between aisles in any row will be permitted, and they shall not be less than 20 inches in average in width and no seat shall be less than 18 inches wide. Rows of seats shall not be less than two feet six inches from back to back. Seats shall be securely fastened to the floor, except in boxes.

b. Plan of seating arrangement shall be submitted to the Inspector of Buildings at the time securing the building permit.

c. Every aisle on main floor shall lead directly to an exit and no steps shall be permitted in same.

d. Mirrors will not be permitted. There shall not be any false doors or windows, giving the appearance of an opening.

Sec. 12. A raised platform may be built, not exceeding six feet in extreme depth and no scenery or anything of a combustible nature shall be permitted there-

on. If a wider platform or stage is to be built or if any scenery or similar appurtenances of a stage are to be used, or if dressing rooms are to be constructed, the stage and dressing rooms shall be constructed as required in the ordinance for theater buildings.

Sec. 13. Heating apparatus and fuel rooms, if installed under the auditorium or passageways, shall be in a fireproof compartment.

Sec. 14. Galleries or balconies shall be provided with rail guards.

Sec. 15. The auditorium shall be provided with a ventilating system capable of delivering into the room not less than 2,000 cubic feet of fresh air per hour for every seat, which shall be kept in operation during performances.

Sec. 16. a. Picture showhouses which are one story in height and not occupied by any other business or used for any other purposes may be built with wooden floors and roofs, in case there is no basement, but where there is a basement, floors shall be constructed of non-combustible material. Roof shall be flat, surrounded by parapet walls at least two feet high. If connected with any other part of a building which is occupied for other purposes, the picture showhouse shall be separated from same by unpierced walls, floors and ceiling constructed of brick, tile or concrete.

b. The walls shall be constructed not less than twelve inches thick if of brick, tile or concrete blocks, and if of reinforced concrete not less than eight inches thick; but they shall in all cases conform to the requirements laid down by the ordinance for walls of theater buildings.

c. If any picture showhouse has a seating capacity exceeding 1,000, or if any picture showhouse is provided with a balcony or a gallery, the building shall be of fireproof construction throughout.

Sec. 17. The highest point of the main floors of the auditorium of any picture showhouse shall not be more than two feet above the grade of the sidewalk at the main entrance.

Sec. 18. The Inspector of Buildings and his assist-

ants shall have the right to enter any building used for the purpose of picture shows and all parts thereof at any time, and especially when occupied by the public, in order to examine such buildings, and to judge of the conditions of the same, and it shall be unlawful for any person to interfere with any of them in the performance of their duties.

Sec. 19. No booth for a picture machine shall be constructed or altered and no picture machine shall be installed until application, with plans and specifications showing full detail of location and construction of the booth and of floor construction supporting the booth has been submitted to the Inspector of Buildings, who shall have a reasonable time thereafter to examine said plans and who shall give a permit after the applicant has paid into the city treasury the sum of one (\$1.00) dollar as a permit fee, which sum shall be credited to the general city fund, if said plans are according to this ordinance and other ordinances which may be applicable, and the giving of a permit by the Inspector of Buildings in violation of this or any other ordinance shall not be a defense to a violation of any of the provisions herein named.

Sec. 20. The Inspector of Buildings shall revoke the permit given for the construction and operation of picture machines in cases where there is any violation of the provisions of this ordinance, and a new application shall be made in order to again operate picture machines, and the fact that the endorsements of any violation may be made by the Inspector of Buildings in the acceptance of plans, or, in any other manner, shall be no defense to a violation of any of the provisions of this ordinance.

Sec. 20a. Any person, firm or corporation violating any of the provisions herein shall be liable to a fine of not less than ten (10) dollars nor more than two hundred (200) dollars, or in default thereof by imprisonment not more than six months in the house of correction. Each and every day's violation shall constitute a separate offense.

Sec. 20A. It shall not be lawful for any person to locate, build, construct or keep in any block a picture

showhouse if two-thirds of the total number of buildings on both sides of the street are devoted exclusively to residential purposes, unless two-thirds of the total number of property owners on both sides of the street shall give their written consent and the same be filed with the inspector of buildings before application for permit be made. The word "street" is hereby intended to also include alley.

Sec. 21. All ordinances contravening any of the provisions of this ordinance are hereby modified so as to give full force to each and every provision of this ordinance.

Sec. 22. This ordinance shall take effect and be in force from and after its passage and publication.

Passed Oct. 23, 1911.

Amended June 10, 1912.

Amended Aug. 4, 1913.

File Number 3587.

AN ORDINANCE

To License Theaters and Moving Picture Show Houses.

The Mayor and Common Council of the City of Milwaukee do ordain as follows:

Section 1. No person, firm or corporation, either as owner, lessee, manager, officer or agent, shall keep, maintain, conduct or operate any theater or moving picture show house in the City of Milwaukee without first obtaining a license therefor in the manner hereinafter provided.

Sec. 2. The word "theater" as used in this ordinance is defined as any edifice regularly used or wholly devoted to the purposes of dramatic or operatic or other exhibitions, plays or performances for admission to which an entrance fee is paid, charged or received, and shall exclude edifices rented or used only occasionally for dramatic or operatic or other exhibitions, plays or performances.

The term "moving picture show house" as used in this ordinance is defined as any edifice regularly used or wholly devoted to the purposes of exhibiting moving

pictures of any kind for admission to which an entrance fee is paid, charged or received, and shall exclude edifices used only occasionally for moving picture exhibitions or illustrated lectures.

Sec. 3. Applications for licenses under this ordinance shall be made to the mayor upon application blanks to be furnished by him, and the mayor may grant or refuse for cause to grant any such license as in his judgment will promote the good order and welfare of the city, but no such license shall be granted for any edifice which does not conform in all respects to the laws of this state and the ordinances of the City of Milwaukee applying to such edifices, and unless the same shall be safe and proper for the purposes for which it is to be used. Whenever the mayor shall grant any such license he shall give to the person, firm or corporation applying therefor a certificate evidencing such grant, signed or stamped with his signature, to be delivered to the city treasurer, and such license shall be issued and signed by the city clerk, and shall be sealed with the corporate seal of the city, and the city clerk shall keep a record thereof, and no such licenses shall be issued until the person applying for the same shall present to the city clerk the city treasurer's receipt for the payment to the city of the license fee hereinafter provided for.

Sec. 4. The mayor shall have power and authority to revoke or annul for cause any license granted according to the provisions of this ordinance whenever in his judgment the good order and welfare of the city will be promoted thereby, and whenever the licensed building does not conform in all respects to the laws of this state and the ordinances of the City of Milwaukee applying to such edifices, and whenever the same shall be unsafe and improper for the purposes for which it is used.

Sec. 5. Applications for such licenses shall be referred by the mayor to the chief of police, who shall cause an investigation to be made and report thereon to the mayor as soon as may be, and it shall be the duty of the chief of the fire department, commissioner of health and the building inspector to assist the chief of police, upon his request, in making such investigations.

Sec. 6. The sum of thirty (30) dollars is hereby fixed as the annual fee for such licenses, and every such license shall expire on the first day of July following the date of its issuance, and in case such license shall be issued after the 31st day of July, the fee therefor shall be two dollars and fifty cents (\$2.50) for each month from the date of the issuance of such license until its expiration, including the month in which the license is issued.

Sec. 7. Every license issued under the provisions of this ordinance shall while the same is in force be posted in a conspicuous place at or near the principal entrance to the premises for which it is issued, so that the same may be easily seen and read by any person passing in or out of such entrance.

Sec. 8. Any person who shall violate any of the provisions of this ordinance shall upon conviction therefor forfeit to the City of Milwaukee a penalty of not more than one hundred (100) dollars for each offense, together with the costs of prosecution, and in default of payment thereof shall be imprisoned in the County Jail or House of Correction of Milwaukee County for not more than sixty (60) days, and each performance and each day's exhibition shall be deemed a separate offense.

Sec. 9. All ordinances or parts of ordinances contravening the provisions of this ordinance are hereby repealed.

Sec. 10. This ordinance shall take effect and be in force from and after thirty days following its passage and publication.

Passed June 23, 1913.

File Number 5306.

AN ORDINANCE

Regulating Theaters, Public Halls and Buildings used for Public Assembly.

The Mayor and Common Council of the City of Milwaukee do ordain as follows:

Frontage.

Section 1. All buildings used wholly or in part for the purpose of theaters, public halls or public assembly shall be so located that the wall containing the front entrance abuts directly upon a street and also has exits from main floor and also the balcony and gallery forward of the proscenium wall upon two other public thoroughfares or one other public thoroughfare, and an open space of fireproof passageway not less than five (5) feet wide for a length of one hundred (100) feet, or when seating capacity is less than one thousand (1,000) persons, with an increase of at least six (6) inches to each additional twenty-five (25) feet of length or fraction thereof, or one (1) inch additional width for each additional one hundred (100) persons seating capacity or fraction thereof, leading directly to a public thoroughfare. Each passageway from the main floor, balcony or gallery shall be independent of each other.

The highest point of the main floor of any theater shall not be more above the grade of the sidewalk than two (2) inches to each foot of the distance of the main entrance, from the lot line to such main floor. The surface of any incline shall be of non-slipping material.

Entrance.

Sec. 2. If the principal entrance, corridor, lobby or vestibule of a theater or public hall is at one side of the audience room, then the center line extended of such principal entrance shall intersect the center axis of the stage and the audience room between the back of the seats the most remote from the stage on said center axis of the stage and the audience room and a point midway between such seat and the wall opposite the proscenium wall.

Floors.

Sec. 3. Floors shall be designed and constructed so as to be capable of bearing in all their parts in addition to the weights of the floor construction, permanent fixtures and mechanism that may be set upon them a live load of 80 pounds for every square foot of surface in such floor on a factor of safety of four (4). Special provisions shall be made for apparatus or heavy loads subject to the approval of the Inspector of Buildings.

Passageway.

Sec. 4. There shall be no steps or recess in a passage, but where necessary, inclined floors full width of such passageway shall be built. The incline shall not exceed two (2) inches in height per foot.

No passageway shall be less than seven (7) feet in height in any part thereof, except at doors and these shall not be less than six (6) feet and eight (8) inches high. All parts of any passageway shall be fireproof.

No doors or openings except entrance doors to auditorium and stage shall be installed in any passageway.

Balconies and Galleries.

Sec. 5. All balconies and galleries shall be constructed of non-combustible material throughout.

Audience Room.

Sec. 6. The auditorium and stage of a theater, public hall or place of assembly shall be separated from any other part of the building used for other purposes by unpierced walls, floors and ceilings.

Walls.

Sec. 7. The following provisions shall apply to all buildings to be used for the purpose of theaters, public halls or place of assembly hereafter built:

(a) The outside walls of any building to be built for the purpose of theaters, public halls, or place of assembly the roofs or ceiling of which are carried on trusses or girders of a span of fifty (50) feet or more shall be as follows:

If the walls are less than twenty-five (25) feet high, they shall not be less than twenty inches thick;

If the walls are more than twenty-five (25) feet high,

four (4) inches shall be added to the thickness of the twenty-five (25) feet for each fifteen (15) feet or fraction thereof added to the height. Each section of fifteen (15) feet or fraction thereof above the twenty-five (25) feet may be made four inches less in thickness than the section below, but in no case shall the top section be less than twenty (20) inches thick.

An increase of four (4) inches in thickness of such wall shall be made in all cases where they are over one hundred (100) feet long without cross walls of equal thickness.

(b) The thickness of the enclosing walls of building or room used for theater, public halls or place of assembly where such rooms are less than fifty (50) feet wide may be reduced by four (4) inches from the above table.

(c) If one or more stories are built above any room devoted for the purpose of a theater, public hall or place of assembly and such stories are carried on trusses or girders the thickness of such walls shall be increased by four (4) inches for each two stories or part thereof above such room.

(d) If solid masonry wall with buttresses, concrete or skeleton construction is employed, and the supports placed not more than eighteen (18) feet apart and extended to the foot of the trusses or girders carrying the ceiling, or if iron or steel columns are inserted in such walls for the support of the superstructure and at a distance not more than twenty-four (24) feet between centers, then the thickness of such wall may be reduced in proportion to the increase of strength afforded by such buttresses or columns, but in no case shall any such wall be less than twelve (12) inches in the top story, and four inches shall be added going downward for each story, or each gallery, or for each twenty-five (25) feet in height of the wall. Curtain walls may be twelve inches in thickness.

Columns in Walls.

Sec. 8. If iron or steel columns are introduced in such wall, the brick work around such column shall be

bonded into the brick work of the connecting walls and each of such columns shall be fireproofed.

Construction.

Sec. 9. If the seating capacity of any building or room used for the purpose of a theater, public hall or place of assembly is more than six hundred (600) the same must be of fireproof construction throughout.

Stairways.

Sec. 10. Stairways affording ingress or egress to a public hall or a theater shall be in width equal to eighteen (18) inches for every one hundred persons of seating capacity of such room or fraction thereof, but in no event shall any such stairway be less than forty-eight (48) inches wide in the clear.

All such stairways shall have hand rails on each side thereof and shall not ascend a greater height than eleven (11) feet without a landing and the length and width of such landing shall not be less than the width of the stairs; no run of stairs shall consist of less than six (6) risers between platforms and no riser shall be placed on any platform. Stairways which are over seven (7) feet wide shall have double intermediate hand rails with end newel posts at least $5\frac{1}{2}$ feet high.

Risers shall not exceed $7\frac{3}{8}$ inches in height, treads shall not be narrower than eleven (11) inches from riser to riser and no winders shall be allowed.

Galleries shall have separate and distinct entrances from the sidewalk level.

If the run of stairs at the bottom is not toward the street there shall be a hand rail three (3) feet above the floor, constructed from the foot of such stairway for a distance of not less than five (5) feet leading toward the street.

There shall be an iron stairway from the stage to the fly galleries and gridiron continuing to the roof of the building or a fireproof passageway or exit, such stairway may be circular but shall in that event not be used for access to dressing rooms.

Stairs and passages leading to a box or boxes seating in all not to exceed thirty (30) people shall be independent of all other stairs and seating, and shall not

be less than two (2) feet ten (10) inches wide in the clear. For each additional twenty (20) of seating capacity or major portion thereof, there shall be an additional width of five (5) inches added to such stairways and passages.

Emergency Exits.

Sec. 11. Emergency exits, stairways and passages shall be provided separately for each floor, balcony or gallery. They shall be of a width of at least ten (10) inches for each 100 persons, and no emergency exit, doorway or stairway shall be less than three (3) feet wide; such emergency stairways shall be made of incombustible materials and shall be kept free of all obstructions or incumbrances of any kind or in lieu of emergency stairways, fire escape chutes may be used which may be 25 per cent less capacity than stairways.

Emergency exits, stairways and passages may be built inside the walls of a building provided they are surrounded by a fireproof partition not less than two (2) inches solid thickness, separating them from the audience rooms. Such exits and all openings leading thereto shall have metal frames filled with fire-resisting doors opening outward, hung from the inside corner of joints and so constructed as not to project nor open beyond the outside of the face of the wall and outer shutters on such doorway shall not be permitted.

Whenever such emergency stairway or passage passes over an exit door or window or other opening, such stairway or passage shall be protected by a hood for a space of five (5) feet greater in width than such opening, with non-combustible material over the opening.

All such emergency exits and stairways shall land at the ground level on a public thoroughfare or in some space that connects directly with the street or alley, and such space to public thoroughfare shall not be obstructed by any doors, gate, bars or obstruction of any kind. Every court or space in which there is an emergency stairway shall have direct and unobstructed access along the surface of the ground to the street or public thoroughfare.

Any doors in openings from any and all exits and

stairways shall be so constructed that when open they shall not obstruct any portion of any other doorway, opening or passageway.

Any door affording ingress to or egress from any théâtre or public hall shall open outward and so arranged that a pressure of 25 pounds from the inside will cause it to open, and shall not be obstructed by draperies nor be fastened in any manner that will prevent it from being opened during the time such place is opened to the public.

Mirrors shall not be permitted in the auditorium room, passageway or corridor.

There shall not be any false doors or windows giving the appearance of an opening.

Curtain.

Sec. 12. In every theater there shall be a solid brick wall of the same thickness as required for outside walls, between the auditorium and the stage as in fireproof buildings; this wall shall extend to a height at least six (6) feet above the auditorium roof. The main proscenium opening shall have a steel curtain vertically operated and fireproof on the stage side, or an asbestos curtain vertically operated and arranged to run to the depth of at least four (4) inches on both sides of the curtain for steel curtains and twenty (20) inches for asbestos curtains in iron grooves fitted to the stage side of the proscenium wall. Such curtain shall be raised both by mechanical and hand power and shall be raised and lowered immediately before the entertainment begins.

No combustible material other than painted decorations shall be applied to the curtain. Plans for such curtains shall be submitted to the Inspector of Buildings, and when in conformity with the requirements of this ordinance he shall issue a permit for the installation thereof.

All other openings in such proscenium wall shall be provided with iron frames and thresholds and standard fire doors.

Theaters, public halls and places of assembly with a seating capacity of one thousand or less may have a

rolling asbestos curtain provided that they run in iron grooves up to the rolls as already described.

Stage.

Sec. 13. The framing of the floor of every stage shall be of non-combustible material.

The stage floor may be of wood, but shall not be less than $1\frac{3}{4}$ inches thick, but the space in front of the curtain shall be of fireproof material.

The entire floor construction and floor of fly galleries, rigging lofts and painting galleries, all railings and supports and stanchions thereon, and all sheaves, pulleys and cables and their supports shall be of non-combustible materials.

All woodwork, including the under side of stage floor boards and all framing for scenery used on or about the stage shall be coated with a fireproofing paint.

No scenery or stage paraphernalia of any kind shall be used upon the stage of any theater, public hall or place of assembly unless treated with a paint or chemical solution which shall make it non-inflammable.

It shall be the duty of the Inspector of Buildings to have all such scenery and stage paraphernalia tested.

All doors or openings in the rear or side of a stage shall be so arranged as to protect the curtain, scenery and auditorium against drafts.

Ventilation.

Sec. 14. There shall be constructed over the stage of every theater, public hall or place of assembly a flue or duct of an area of at least one-twentieth of the area of the stage and constructed of non-combustible material. All such ducts or flues shall be provided with outlet openings with counterweight shutter or covers hung at the bottom with brass butts. Such outlet opening shall be controlled by ropes with fusible links for each ten (10) square feet of the area of the stage and shall be distributed and stationed as near the level of the grid-iron as practicable, and also controlled by manual power, the ropes for which shall be on opposite sides of the stage near the exits, and having a sign giving directions as to the operation of same, and such ventilator shall be tested before each performance to see that it is in proper working order.

Every theater, auditorium, public hall or place of assembly, including dressing rooms, shall have a ventilating system which shall introduce sufficient fresh air to change the entire volume of the room every thirty (30) minutes.

All electric fuses, switches or cutoffs shall be grouped near the exit and enclosed in a metallic cabinet, also a cut-off for the interior lighting system, installed on the outside of the building and of easy access so that the firemen can shut off same in case of fire.

Sprinkling.

Sec. 15. The system of automatic sprinkling shall be supplied with water from a tank located not less than twenty (20) feet above the level of the highest sprinkling head of the system; and also to be connected directly with the city water system.

Lighting.

Sec. 16. Outside and inside stairs and passageways shall be supplied with an independent lighting system, with one light on outside of each exit and at least one light every fifteen (15) feet for stairways, inclines or platforms, which shall be in operation during the entire period such place is open to the public and until the audience has left the building.

The word "OUT" in black letters at least six (6) inches high on white background shall be placed above the opening to each means of egress from a theater, public hall or place of assembly, and a red light shall be burning above the word "OUT" during the period such theater, public hall or place of assemblage is open to the public and until the audience has left the building.

Every portion of a theater, public hall or place of assemblage devoted to the use or accommodation of the public, and all outlets therefrom leading to the street, including all open courts, passageways, corridors, stairways and exits shall be well and properly lighted during every performance and remain lighted until the audience has left the premises.

Wiring.

Sec. 17. All electric wires shall be run in rigid non-combustible conduits.

Sec. 18. Heating apparatus and fuel room if installed within the building used for the purpose of theater, public hall or place of assembly shall be built entirely of fireproof material and shall be separated from the auditorium of the theater, public hall or place of assembly by unpierced ceiling and walls. The walls shall be at least twelve (12) inches thick, and the ceiling at least six (6) inches thick. All openings shall be provided with standard fire doors.

Radiators for heating passageways or auditoriums shall be recesses or elevated at least seven (7) feet above the floor.

Seating.

Sec. 19. Not more than fourteen (14) seats between aisles in any row shall be permitted, and they shall not be less than twenty (20) inches in width. Rows of seats shall not be less than two (2) feet eight (8) inches from back to back. All seats shall be securely fastened to the floor except in the boxes. No bank of seats shall be of greater rise than twenty-two (22) inches.

All groups of seats shall be so arranged that there shall be an aisle on each side of each group except that groups of five (5) seats or less may abut upon a wall at one side and an aisle on the other side.

The number of banks of seats on the main floor shall not exceed fifteen (15) and balconies or galleries nine (9) rows, unless an intervening cross aisle is provided between each fifteen rows of seats on main floor, or each nine (9) rows of seats in a balcony or gallery, or a direct exit is provided for each aisle.

There shall not be more than twelve (12) feet rise measuring vertically in any aisle in any gallery without a direct exit by tunnel or otherwise to a corridor with a free opening onto the gallery stairs or other direct discharge to the street, or at such elevation of twelve (12) feet an intervening or cross aisle leading direct to an exit. No tunnel shall be less than three (3) feet wide in the clear.

Plans of seating shall be submitted to the Inspector of Buildings at the time of securing the building permit.

Aisles.

Sec. 20. Aisles shall not be less than thirty-six (36)

inches in width at their narrowest point at the farthest end from the exits extending from same, they shall increase in width one-fourth inch to each foot of the length of the aisle, or in lieu thereof a straight aisle, the width of which shall not be less than an average width of the foregoing calculation, but no straight aisle shall be less than three (3) feet eight (8) inches wide. Aisles along walls shall not be less than three (3) feet wide at any point.

Any person other than employee in uniform or with a badge of identification of the theater, public hall or place of assembly who shall at any time of the performance or entertainment stand in any aisle, passageway, exit, lobby or corridor, and any person who shall place any loose chairs, ticket booth or obstruction of any kind in any such aisle, passageway, exit, lobby, or vestibule during such time shall be subject to all the penalties for violations of any of the provisions of this ordinance.

Fire Apparatus.

Sec. 21. A standpipe of not less than three (3) inches in diameter shall be installed on each side of the stage of a theater, public hall or place of assembly with a hose valve at the stage floor and at each level above and below, and a hose connected to each valve ready for use at all times. The standpipes shall be connected with the city water supply and with a tank on the roof containing not less than three thousand (3,000) gallons of water, shall be connected with water supply and always kept filled.

Portable liquid extinguishers or fire pumps shall always be kept ready for use on and under the stage, in fly galleries and in rigging lofts, and in addition thereto at least four (4) fire department axes and four (4) pike poles shall be kept ready for use on each level or floor of the stage.

All dressing rooms and the stage and all levels above or below the stage shall be equipped with an automatic sprinkler system.

Every theater shall be provided with an approved system of automatic or manual fire alarm telegraph apparatus connected with the necessary wire with the

headquarters of the city fire alarm telegraph. The number and location of the boxes and character of the system shall be determined by the Chief of the Fire Department.

Dressing rooms and property rooms shall be built of fireproof material throughout and be connected with proper ventilation to the exterior. Dressing rooms placed above the stage level shall be separated with a fireproof partition having but one opening to the stage with a standard fire door.

Diagram of Floor, Etc., to Be Printed in Program.

Sec. 22. It shall be the duty of all managers of any theater, public hall or place of assembly for any performance, where programs are issued, to cause to be printed in the programs on the page opposite that on which the cast is printed a diagram of the main floor, the balcony and the gallery, each at least 3 inches by 5 inches, and showing conspicuously all exits and the aisles leading to each. If programs are not used for a gathering of people in a theater, public hall or place of assembly, said diagrams are to be printed on cards or papers and distributed in the same manner as if programs were used. A diagram of the seats on each floor and the exits leading from each floor drawn to a scale of one-eighth ($\frac{1}{8}$) of an inch to a foot shall be framed and hung in the lobby or vestibule so as to be easily seen by the public upon entering such building.

Sec. 23. Any person, firm or corporation building in violation of any of the provisions or any person who shall assist in the violation or shall fail to comply with any provisions of this ordinance, or who shall build in violation of any detailed statement of application, plans or specifications submitted or approved thereof, providing such detailed plans as accepted are in accordance to the provisions of this ordinance, and in case they are not it shall be no defense to any violation of this ordinance that such plans or any part thereof were accepted by an officer of the City of Milwaukee or passed upon with approval thereof, or any building permit issued thereunder subject to the above provisions shall for each and every such violation or non-compliance for each and every day thereof be liable to a fine

of not less than ten (10) dollars nor more than five hundred (500) dollars, or in default of fine by imprisonment in the house of correction of Milwaukee County not more than six months.

Sec. 24. All parts of ordinances contravening the provisions of this ordinance are hereby repealed.

Sec. 25. This ordinance shall take effect and be in force from and after twenty (20) days following its passage and publication.

AN ORDINANCE

Regulating the Manufacture, Storage or Handling of Inflammable Motion Picture Films.

The Mayor and Common Council of the City of Milwaukee do ordain as follows:

Section 1. It shall be unlawful for any person, firm or corporation, or its agents or servants, to manufacture, keep, store or handle any inflammable motion picture films in greater quantities than ten (10) reels, or aggregating more than ten (10) thousand feet in length, without first obtaining a permit therefor from the Inspector of Buildings; provided, however, that all films stored in places covered by this section shall be contained in fire-resisting receptacles.

Sec. 2. The Inspector of Buildings shall issue a permit for the manufacture, keeping, storage or handling of inflammable motion picture films, for which a fee of \$1.00 shall be paid to the city treasurer and credited to the general city fund, upon written application being made on blanks furnished by the Inspector of Buildings, and giving the following information, and when in compliance with all the requirements of this ordinance.

(a) Name and address of the applicant.

(b) Location of the premises on which the inflammable motion picture films are to be manufactured, stored, kept or handled.

(c) Other purposes for which the building or premises is being used.

(d) Nature of the business in which the applicant is engaged in such building or premises.

(e) Kind of construction of the building.

(f) Any other pertinent information regarding the manufacture, storage, keeping or handling of inflammable motion picture films for which the application is made.

Sec. 3. The Inspector of Buildings shall not issue a permit for the manufacture, storage, keeping or handling of inflammable motion picture films for any rooms or premises—

(a) Which is situated within fifty (50) feet of the nearest wall of any building occupied as a school, theater, church or other place of assemblage of more than fifty (50) persons.

(b) which is occupied as a tenement house, lodging or boarding house or hotel;

(c) where the rooms to be occupied are artificially lighted by any other means than electricity, and unless when so lighted, all electric wires shall be run in metal conduits, all lights shall be in air-tight bulbs, all globes or tubes in suitable wire cages and fitted with keyless sockets;

(d) which is of wooden construction;

(e) where the rooms so to be occupied for storage, manufacture and repair are not equipped with an approved system of automatic sprinkling;

(f) unless the room to be used for the manufacture, storage, keeping or handling of inflammable motion picture films are separated from all other parts of the building with unpierced walls, floors and ceilings except the exit doors and exterior windows (such exit doors to be standard automatic fire-doors) and all shelves, furniture and fixtures of such rooms shall be constructed of fireproof material.

Sec. 4. All examining, repairing or piecing together of inflammable motion picture films shall be done in a room used for no other purpose and separated from the rest of the building by fireproof wall, ceiling and floor, and all doors shall be standard automatic fire-doors.

Sec. 5. All furniture, fittings or fixtures in a room where inflammable motion picture films are repaired or pieced together shall be of fireproof material.

Sec. 6. Not more than fifteen (15) reels or fifteen (15,000) thousand feet in the aggregate of inflammable motion picture films shall be under examination or repair at one time; and each reel of films shall be kept in a tightly closed fire-resisting box when not being examined or repaired.

Sec. 7. Each room used for the repairing or piecing together of inflammable motion picture films shall contain a metal can at all times containing at least two (2) gallons of water, wherein all waste parts and scraps of such films shall be placed and kept covered with water.

Sec. 8. No collodium, amyl, acetate, or other similar inflammable cement, liquid or substance in quantities greater than one (1) quart shall be kept in a room wherein inflammable motion picture films are manufactured, stored, kept, handled or repaired.

Sec. 9. No heat other than steam or hot water heat, and no stove, forge, torch, boiler, furnace, flame or fire, and no electric or other appliance likely to produce an exposed spark shall be allowed in any room used for the manufacture, storage, keeping, handling, or repairing of inflammable motion picture films.

Sec. 10. It shall be unlawful for any person, firm or corporation, or their agents or servants, to use for exhibition purposes any inflammable motion picture films, unless in a building and a machine or apparatus for which a permit has been issued by the Inspector of Buildings, for which a fee of one dollar (\$1.00) shall be paid to the city treasurer and credited to the general city fund.

Sec. 11. Each room used for the manufacture, storage, keeping, handling or repairing of inflammable moving picture films, shall be equipped with at least two (2) approved hand chemical fire extinguishers, one (1) receptacle containing at least two gallons of water and one (1) receptacle containing at least one-half ($\frac{1}{2}$) bushel of sand. Each film to be stored or kept in metallic boxes with tight fitting covers on any premises.

Sec. 12. No smoking or the use of matches shall be permitted within a room used for the manufacture, stor-

age, keeping, handling or repairing of inflammable motion picture films, and signs calling attention to the same shall be posted in at least three (3) conspicuous places within the room and one at the entrance of the same. Inspection shall be made by the Inspector of Buildings from time to time to see that all regulations of this ordinance are complied with.

Sec. 13. Any person, firm or corporation, their agents or servants, manufacturing, keeping, storing, handling or repairing any inflammable motion picture films in violation of any of the provisions of this ordinance or who fails to comply with, or assists in the violation of any of the provisions of this ordinance, or who shall deviate from any of the detailed statements in the application, plans or specifications submitted to and approved by the Inspector of Buildings, provided such detailed statement of the application, plans or specifications as accepted are according to the provisions of this ordinance (and in case they are not it shall be no defense for a violation of this ordinance that such statements in the application, plans or specifications were accepted by an officer of the City of Milwaukee or passed upon with approval) or from any permit issued thereunder subject to the above provisions, shall for each and every violation or non-compliance for each and every day thereof, be liable to a fine of not less than ten (10) dollars nor more than five hundred (500) dollars and costs, and in default of payment of such fine and costs, shall be imprisoned in the House of Correction of Milwaukee County not more than six months.

Sec. 14. All parts of ordinances contravening the provisions of this ordinance are hereby repealed.

Sec. 15. This ordinance shall take effect and be in force after ninety days from its passage and publication.

Passed November 25, 1912.

AN ORDINANCE

Regulating Dry Cleaning Establishments.

The Mayor and Common Council of the City of Milwaukee do ordain as follows:

Section 1. Dry cleaning by the use of naphthas or other volatile products in quantities exceeding two gallons shall be carried on in buildings of fireproof construction throughout without basement and not more than three stories in height and subject to the conditions stated in this ordinance.

Floors shall be of impervious fireproof construction.

All doors and frames of said building shall be of standard fireproof construction and the doors shall swing outward.

All window frames and the sashes shall be of metal, glazed with wire glass.

The stairway shall be enclosed with walls of fireproof construction, doors to such stairway shall be equipped with fusible links which will fuse at less than 140 degrees Fahrenheit.

All buildings two or three stories high shall be provided with an outside stairway not less than three (3) feet wide and built of fireproof material.

Elevator shafts shall be enclosed with walls constructed of fireproof materials, and shall be provided with fire doors equipped with fusible links which will fuse at less than 140 degrees Fahrenheit.

Corrugated iron shall not be considered as fireproof under the provisions of this ordinance.

Elevator pits shall be provided with ventilators at least six (6) inches square, extending up and terminating in an opening; flush with the outside of the building at least four (4) feet above the adjacent grade.

There shall be provided a ventilating duct extending around the entire walls of each room. Openings leading into such ducts shall be within six (6) inches of the floor, and not more than six (6) feet apart; this duct shall lead to the outside of the building, and be provided with an exhaust fan installed at the outlet, and the duct shall be of sufficient capacity to change the air within the room every fifteen (15) minutes. This fan

shall be kept in operation at all times during the use of such rooms for dry cleaning. There shall also be installed in the outside wall of such dry cleaning rooms a ventilator of sufficient size to supply fresh air.

Sec. 2. There shall be no connections from any dry cleaning room to any public or private sewer, drain, catch basin or pit.

Sec. 3. For heating purposes hot water or steam shall be used.

It shall be unlawful to have any heat generating boiler, dynamo or motor within the rooms used for dry cleaning.

Sec. 4. Where artificial light is used the same shall be by vapor proof incandescent lamps enclosed in metal cages, with keyless sockets, and with switches and cut-outs located outside the rooms used for dry cleaning. Wires must be run in rigid iron conduits.

Sec. 5. Dry cleaning by machinery shall be done on the first floor only.

Sec. 6. All volatile liquids shall be stored in tanks placed underground as herein provided for.

2. All storage tanks shall be constructed of at least No. 12 U. S. standard gauge galvanized steel or iron, or at least one-quarter ($\frac{1}{4}$) inch black open hearth tank steel. Tank shall be coated on the outside with rust-resisting material.

3. The capacity of tanks shall not exceed three hundred (300) gallons each.

4. Not more than six (6) tanks of three hundred (300) gallons capacity each shall be allowed under the building or outside within twenty-five (25) feet of an adjacent building.

5. All tanks shall be installed not less than two (2) feet below the surface of the ground, and the top must be below the level of the lowest pipe line in the building used in connection with the equipment. If there should be more than one tank, the tanks shall be separated by at least one foot of earth, well tamped in place.

6. There shall be no opening or pipe connections except on the top of the tanks.

7. Any person, firm or corporation installing in any building or on the premises of any building any tank when the provisions of this ordinance are in effect and applicable, shall notify the Inspector of Buildings before covering or enclosing the same, and the Inspector of Buildings shall have an inspection made of such tank and connections.

No person, firm or corporation shall cover or enclose any tank aforesaid until inspected by the Inspector of Buildings or one of his assistants.

8. All joints of such storage tanks shall be made so that the tanks will stand a test by hydraulic pressure of twenty-five (25) pounds to the square inch.

9. Tanks within five feet of any building shall be buried two feet lower than the level of the lowest floor of any such building.

10. No naphtha or other volatile product exceeding in quantity five (5) gallons in any one open receptacle shall be used for cleaning purposes, in any other manner except in enclosed machines. Naphtha or other volatile products, shall be conveyed from the tanks to the machine in pipes by means of a suction pump or suction system, properly controlled by valves.

It shall be unlawful to store or settle any volatile liquid in open vessels.

Sec. 7. All storage tanks shall be provided with galvanized wrought iron vent pipes at least one inch in diameter, the said pipes to be connected with the top of the tank and there fitted with a brass wire screen of at least thirty (30) mesh. This vent pipe shall be carried up at least four (4) feet above the roof of said building and terminate in a return bend, openings of which shall be covered with a brass wire screen of at least 30 mesh.

All connections shall be of heavy cast fittings, and the screw joints shall be made with litharge and glycerine.

Sec. 8. Filler pipe shall be made of galvanized wrought iron pipes two (2) inches or more in diameter,

entering at the top of the tanks and extending to the bottom of the same.

Filler pipes shall extend to the outside of the building and shall at the end be closed by screw cap securely locked and shall be protected by cast iron filler boxes, which cast iron filler boxes shall be locked and shall be flush with the surface of the ground.

Filler pipes shall be provided with a filling cock or valve, and with a wire screen of thirty (30) mesh brass wire at or near the tank connection and below the filling cock or valve.

Screw joints shall be made with litharge and glycerine.

Sec. 9. The dry cleaning room shall be equipped with a steam supply directly from the boiler for the purpose of extinguishing fires, which steam supply shall have at least two one inch openings or jets at opposite ends of the rooms, which openings or jets shall be at least one foot below the ceiling. This steam supply shall be controlled by a quick opening valve located at least ten feet away from the room.

Sec. 10. The place where the material cleaned is drying shall have floor and ceiling ventilation each equal to a sectional area of ten (10) square inches for each two hundred (200) cubic feet of space or fraction thereof. The ventilating openings shall be provided with ventilator hoods on the outside of the building.

Sec. 11. Before proceeding with the construction, erection, alteration, remodeling or repairs of any building which may be used for the purpose of dry cleaning or the installation of any tank, a permit shall be secured from the Inspector of Buildings. Before the Inspector of Buildings shall issue such permit or permits, an application shall be filed with him by the owner or agent of such building, together with plans and specifications, showing full details of location, construction, remodeling, alteration or repairs, or installation of tank.

Every applicant for a permit for the installation of any tank shall pay into the city treasury the sum of two (\$2.00) dollars, which sum shall be credited to the general city fund, and such permit shall be duly signed by

the city treasurer, city comptroller and Inspector of Buildings, and the same shall be in full for the inspection of the tank and its connections and the permit.

If such application, plans and specifications shall show that such building is to be constructed, remodeled, altered or repaired in conformity with the provisions of this ordinance, the Inspector of Buildings shall issue a building permit to such applicant. After submission of plans the Inspector of Buildings shall have a reasonable time to ascertain whether such plans and specifications are in compliance with this ordinance.

Sec. 12. All ordinances or parts of ordinances contravening the provisions of this ordinance are hereby repealed.

Sec. 13. No person, firm or corporation owning, controlling or managing any building or premises wherein or whereon anything in violation of this ordinance shall exist or shall be placed, or any person employed who shall assist in the commission of such violation, and all persons who shall violate any of the provisions of this ordinance, or any requirements thereof or who shall build in violation of any detailed statement of application plans and specifications submitted and approved thereunder, or any building permit issued thereunder, or violate any of the terms of this ordinance, even if the plans and specifications submitted and approved by the Inspector shall be contrary to the provisions of this ordinance, shall for each and every such violation or non-compliance and for each and every day's violation be liable to a fine of not less than twenty-five (25) dollars nor more than five hundred (500) dollars and in default of payment imprisonment in the House of Correction of Milwaukee County for not more than six (6) months.

Sec. 14. This ordinance shall take effect and be in force after its passage and publication.

Countersigned July 1, 1911.

Passed July 31, 1911.

Published August 8, 1911.

File Number 4555

93—AN ORDINANCE

To Regulate the Occupancy of Public Property During Building Operations.

The Mayor and Common Council of the City of Milwaukee do ordain as follows:

Section. 1. Any person, firm or corporation, their agent or employe, having first obtained a building permit or a permit to build a sidewalk, may make application, and there shall be granted to holder of such permit by the Commissioner of Public Works a street permit for a temporary occupancy of a part of the public highway in front of the premises of the structure in process of construction but not extending beyond the continuation of the lot lines. Such occupancy and temporary sidewalk shall not cover more than one-third of the public highway and in no case more than forty (40) feet in width in total, or not more than one-third the width of any alley, and in case there are any railway tracks on such street no building material, fence or edge of a temporary walk shall be nearer than eight (8) feet to the nearest rail.

Sec. 2. The permission to occupy the sidewalks, streets or alleys for the purpose of building is intended only for use in connection with the actual erection, alteration, repair or removal of structures. No advertising sign of any kind shall be permitted on this part of the public highway.

Sec. 3. Earth and rubbish shall not be stored on any public property. Dry rubbish shall be kept wetted down to prevent its being scattered by the wind.

Sec. 4. Sufficient lights shall be displayed and maintained during the whole of every night at each excavation, pile of material, fence or other obstruction on any public highway, to so cast their rays that each excavation, pile of material, fence or other obstruction, shall be in full view of the public.

Sec. 5. On the part of such public highways for which a permit has been granted building materials may be stored or used and temporary sheds or fences

may be erected for use in connection with the building operations in such manner as to protect the public. No guy lines shall be less than fifteen (15) feet above the road-bed outside of the confines of the street permit.

Materials, fences or sheds shall not be placed within two (2) feet of any tree, fire hydrant, alarm box or catch-basin, and all gutters shall be kept free and clear at all times.

Sec. 6. Persons obtaining a street permit shall not interrupt the sidewalk traffic but shall at all times keep open and unobstructed a sidewalk of not less than six (6) feet in width. This sidewalk may be crossed by a driveway to give access to the building site, but any damage that may be done to the sidewalk shall be repaired by the person to whom the permit is issued and the sidewalk shall be left in as good condition as before the permit was issued.

Such sidewalk may be the permanent sidewalk or a temporary sidewalk of planks located within the confines of the street permit. Such temporary sidewalk may be placed at the established grade or at any elevation not exceeding four (4) feet above such grade and in case a sidewalk is so elevated it shall be provided with inclines with not more than $1\frac{1}{2}$ inch rise in two feet, or with steps of not more than seven (7) inch rise and less than 8 inch tread on both ends thereof, and these inclines or steps shall be capable of sustaining a safe load of 80 pounds per square foot on a factor of safety of 4.

Sec. 7. A close fence at least four (4) feet high shall be maintained on both sides of any elevated sidewalks or on any sidewalk while excavations are being made or continue to exist.

Any excavations for structures to be built within ten (10) feet of a public highway, shall at all times be guarded by a close board fence not less than four (4) feet high.

Sec. 8. If the structure to be erected is to be more than twenty-five (25) feet in height above the grade at the front and is in any part less than fifteen (15) feet away from the inner edge of the public sidewalk there shall be a roof built over the sidewalk consisting of two

(2) layers of 2 inch plank on a frame work not less than ten (10) feet above the sidewalk, and there shall be an enclosure on top at the outside edges of said roof not less than four (4) feet high of boards. This roof shall be built as soon as the structure reaches the height of ten (10) feet and shall be maintained until the entire work on the sides of the structure abutting or near the lot line is completed.

Sec. 9. When additional stories are added to an existing building and such building is located within five (5) feet of the lot line there shall be built over the sidewalk at the level where the new stories commence a scaffold not less than eight (8) feet wide, composed of a frame work capable of carrying a load of 200 pounds per square foot on a factor of safety of 4, and the floor of two (2) layers of 2 inch plank to serve as a protection of the sidewalk, and the outside shall be enclosed not less than three (3) feet high with boards.

Sec. 10. Temporary enclosures of shop fronts during their construction or repair may extend over the lot line five (5) feet for their entire height subject to all the regulations of this ordinance.

Sec. 11. Outside scaffold on a building near the lot line shall have a floor of two-inch planks and at the outer edge thereof a closed fence not less than four (4) feet high when there is no covering over the sidewalk.

Sec. 12. Upon the termination of the building operations, the street permit shall cease to exist, and all parts of the public highway occupied under the permit shall be vacated, cleaned of rubbish or any obstruction, and placed in a safe condition for public travel, all costs, charges, and expenses through lawsuits, or cost of fixing the place, shall be chargeable to the one receiving the permit.

Sec. 13. The fees for street permits shall be paid into the city treasury and credited to the General City Fund and shall be as follows:

One (1) dollar per month for every 25 feet of street front or fractional part thereof, for the first three months, two (2) dollars per month for the succeeding period of three months and shall thereafter be increased

in periods of three months, each one (1) dollar per month over each preceding period.

Sec. 14. Any person, firm or corporation, agent or employe violating any of the provisions of this ordinance or any firm or corporation, or agent or employe assisting in the commission of any violation of any of the requirements thereof or any person, firm or corporation, agent or employe, who shall neglect to do each and every act required herein whether such act shall have been approved by the Inspector of Buildings or Commissioner of Public Works or not, shall for each and every day's violation or non-compliance be liable to a fine of not less than five (5) dollars, nor more than five hundred (500) dollars or in default of fine by imprisonment in the House of Correction of Milwaukee County not less than one day nor more than six months.

Sec. 15. All ordinances or parts of ordinances contravening with the provisions of this ordinance are hereby repealed.

Sec. 16. This ordinance shall take effect and be in force from and after twenty (20) days following its passage and publication.

Passed August 4, 1913.

File Number 4161.

90—AN ORDINANCE.

To Regulate the Construction of Fences and Railings.

The Mayor and Common Council of the City of Milwaukee do ordain as follows:

Section 1. Enclosure fence for business or manufacturing premises where material or utensils are stored, or places of amusement, shall not exceed nine (9) feet in height, and all other fences when erected for actual spite or malice, shall not exceed five (5) feet in height above the grade. All fences shall be so constructed to withstand a wind pressure of at least thirty (30) pounds to the foot.

All barb wire used for fence purposes shall be at least six (6) feet above the grade.

Sec. 2. Guard rails, in all buildings except private

residences, shall be not less than 3 feet 6 inches in height with not less than two intermediate rails equally spaced along all areas which are not protected by grating or covers and shall be of sufficient strength to withstand a pressure of 150 pounds to the lineal foot.

Sec. 3. Balcony railings shall not be less than thirty (30) inches high.

Sec. 4. Stair railings shall not be less than thirty-two (32) inches high and well hole railings in any buildings shall not be less than thirty-six (36) inches above the floor or the riser of the stair.

Sec. 5. Any person, firm or corporation, agent or employe violating any of the provisions of this ordinance, or any firm or corporation, agent or employe assisting in the commission of any violation of any of the requirements thereof, or any person, firm or corporation agent or employe, who shall neglect to do each and every act required herein, whether such act shall have been approved by the Inspector of Buildings or not, shall for each and every day's violation or non-compliance, be liable to a fine of not less than five (5) dollars, nor more than five hundred (500) dollars, or in default of fine by imprisonment in the House of Correction of Milwaukee County not less than one (1) day nor more than six (6) months.

Sec. 6. All ordinances or parts of ordinances contravening with the provisions of this ordinance are hereby repealed.

Sec. 7. This ordinance shall take effect and be in force from and after twenty days following its passage and publication.

Passed August 4, 1913.

File Number 4418.

92—AN ORDINANCE

Regulating the Construction of Docks Along the Navigable Waters of the City of Milwaukee.

The Mayor and Common Council of the City of Milwaukee do ordain as follows:

Section 1. The superstructure of all docks hereafter built or reconstructed along any of the navigable rivers, canals, slips or basins connected with or a part of the Milwaukee harbor, shall be of re-inforced concrete and in accordance with plans and specifications established by the Commissioner of Public Works.

Sec. 2. Any person, firm or corporation who shall violate the provisions of this ordinance shall be subject to a penalty of not less than five hundred dollars (\$500) nor more than one thousand dollars (\$1,000), and in default of payment thereof, shall be imprisoned in the House of Correction for Milwaukee County, not to exceed ninety (90) days. The constructing, in whole or in part, or the maintaining of any dock, which does not conform to this ordinance, shall be considered a violation hereof, and each and every day that such violation shall continue shall be a separate violation.

Sec. 3. This ordinance shall take effect and be in force from and after twenty days following its passage and publication.

Passed August 4, 1913.

File Number 5064.

107—AN ORDINANCE

To Regulate the Construction, Erection, Remodeling and Operation of Elevators in the City of Milwaukee.

The Mayor and Common Council of the City of Milwaukee do ordain as follows:

Section 1. Subject Matter.

The subject matter under this ordinance shall include all passenger and freight elevators, hoists, lifts and dumbwaiters having ropes, sheaves and platforms, or any mechanical device and their enclosures permanently fixed in position for the purpose of conveying people or

any load to any point on or in a structure, above or below the grade line, provided, however, that temporary elevators, lifting tackles, derricks or hoists to be used in the construction, alteration, repairing or wrecking of buildings, or that swinging scaffolds or traveling cranes and devices using endless operating bucket or hooks shall not be subject to the provisions of this ordinance.

Sec. 2. Enclosures of Elevator Shafts and Dumbwaiters.

All passenger and freight elevators hereafter erected shall have their hatchways or shafts enclosed with walls of fireproof material, or steel frame with wired glass, the thickness and strength of such enclosures shall be according to the requirements of the building ordinance pertaining to such enclosure, provided, however, that elevators and dumbwaiters in buildings not exceeding two (2) stories in height above the grade or above the basement and not exceeding a total travel of thirty-five (35) feet, may be enclosed with non-fireproof enclosure above the basement, or shall be enclosed and protected on each and all floors above the basement with suitable framework not less than six (6) feet in height, except over counterweight runways where it shall extend from floors to ceilings. All elevators not exceeding a travel of thirty-five (35) feet, not enclosed continuously with a fireproof enclosure, shall have the shaftway opening in the top floor provided with a fire door, which is operated by the movement of the car.

Elevator shaftways located on the outside of any building shall be enclosed with walls of fireproof material, in place of which, for freight elevator shaftways, an open wire mesh enclosure not less than No. 9 gauge wire, and not more than one and one-half (1½) inch mesh will be permitted.

No elevator shall be constructed in the well hole of any stairway, unless such elevator shall be enclosed with walls of brick or other fireproof material, provided, however, that no elevator shall be constructed in the well hole of any stairway in any apartment, tenement, hospital, hotel, boarding or lodging house.

Where counterweight runways are located in the elevator shaftway, the outside must be entirely enclosed

with a solid guard, the runways must be entirely enclosed on the inside with a solid guard to a height of eight (8) feet from the bottom of the pit, and ten (10) feet down from the top limit of travel of the car. Where counterweight runways are located outside of the elevator shaftway, they must be entirely enclosed on all sides with a solid guard.

Sec. 3. Enclosure of Shafts and Pits in Basement.

In all buildings in which any elevator or dumbwaiter shaft extends down into a basement or sub-basement, that portion thereof shall be enclosed in walls of fireproof materials, the thickness and strength of such enclosures shall be according to the requirements of the building ordinances pertaining to such enclosures, and all openings to such enclosures shall be protected by fireproof frames and doors; where such elevator shafts do not extend down into basement, they shall be provided with fireproof pits at the lowermost floor level at which they serve, and such pits shall have no openings except for cables or other elevator equipment.

Sec. 4. Elevator Pits and Clearance.

All elevators hereafter installed with a speed up to and including 50 feet per minute, must have a pit not less than two feet in depth below the lowest landing, and an overhead clearance of not less than two (2) feet when car is at its highest landing. All elevators with a speed over 50 feet and up to and including 150 feet per minute, must have a pit not less than three feet deep and an overhead clearance of not less than four (4) feet. All elevators having a speed over 150 feet and up to and including 350 feet per minute must have a pit of not less than four (4) feet in depth and an overhead clearance of not less than five (5) feet. All elevators having a speed greater than 350 feet per minute must have a pit not less than four (4) feet deep and an overhead clearance not less than six (6) feet. The overhead clearance for counterweights shall be not less than the above mentioned clearance for cars at the various speeds. The pit and overhead clearance must be equal in area to that of the shaftway.

All passenger and power driven freight elevators shall

be provided with spring cushions of approved type resting on steel framework secured to the rails, or in the pit forming the bottom of the shaft, and car frame shall be arranged with steel or iron plate or cups acting as bumper under car to rest on springs should car run below the bottom floor limit; other approved bumpers equal to the spring type will be permitted. Oil buffers may be attached to the bottom of the car if securely fastened, but it is preferable to install them in the pit.

No explosive nor inflammable materials nor any material liable to develop suffocating gases, nor any pipe for conveying the same shall be stored or kept under any elevator or shaftway, and no elevator shaftway shall be used for the storage of any material or the running of any rope, wire or pipe except for the use of the elevator itself, and no machinery shall be located in such shaftway under car.

All elevators, and other mechanical devices used for similar purposes, shall be kept clean and free from excessive grease and dirt.

Sec. 5. Pent Houses.

Pent houses on roofs of buildings exceeding two (2) stories in height above the basement shall be constructed of fireproof material and shall be provided with fireproof window and door opening through which proper light and access can be had to overhead machinery; in non-fireproof buildings of two stories or less in height above the basement, the walls and roofs of pent house may be of wood covered with incombustible material.

Sec. 6. Doors and Gates to Elevator Enclosures.

All doors to passenger elevator shafts shall be constructed of metal with solid metal panel in lower part and wired glass in the upper part; such doors shall have safety locks or other appliances which cannot be opened from the outside except by means of key, so that doors will be securely closed when the elevator car is not at the floor where doors are located, and the operator on all elevators must see that doors are securely closed before starting car, and no doors shall be either open or closed except where car is at its landing; should any interlocking device be installed, the same shall under

all conditions be sufficient for the purpose required. No passenger elevator shall be operated which has more than one entrance or doorway to the car, unless entrance or doorway farthest from the point where the car is operated is provided with a door on the inside of the car, and such door shall be closed by the operator before the car is put in motion.

All shafts for freight elevators and dumbwaiters enclosed with fireproof enclosures shall be provided with fireproof frames and doors on the outside thereof; such doors shall be provided with a device or system which will automatically close the opening in the event of fire (fire doors hung to swing on vertical axis will not be permitted). All doors or openings to freight elevator and dumbwaiter shafts shall be provided with semi-automatic self-closing hatch gates to protect the approach to the elevator, such gates to freight elevators shall not be less than 5 feet 6 inches in height, with no greater space than eight (8) inches from the lower rail to the floor, and shall be of sufficient strength to resist a lateral pressure of at least 200 pounds at its center. In case local conditions do not permit of a gate of the specified height, a lower gate may be used, provided that such gate be placed not less than six (6) inches nor more than twelve (12) inches away from the car or platform of the elevator, and that ropes, chains or other efficient warning devices are suspended from the platform. In lieu of doors or gates for dumbwaiter shafts, semi-automatic fireproof doors may be placed inside the shaft but no semi-automatic gates shall be required for hand power dumbwaiters having the sill of doors or shaft openings raised more than two (2) feet above the floor.

Sills of doors to elevator shaft shall have a non-slippery surface.

All doors covering sidewalk elevator holes shall open only sufficiently for proper service, and when open shall form a suitable guard to the aperture, and all sidewalk elevators shall be equipped with a device to prevent the operation of such elevator until the covering or doors are open. All sidewalk doors and frames shall have a rough face or surface, and be constructed and arranged

so that no part of the frame or hinges shall project above the level of the sidewalk, and capable of carrying a superimposed load of 200 pounds per square foot. Doors shall be kept closed when elevator is not in actual use.

Sec. 7. Toe Guards.

The under side of the floor or other parts of the building which projects into the elevator shafts, shall be equipped with a smooth steel guard of not less than No. 16 gauge, curved and sloped from the projection to the edge of such enclosure for the width of the opening to such elevator car, the slope of such guard plate shall be at an angle of not less than sixty (60) degrees.

Sec. 8. Protection Under Sheaves in Hatchway.

The entire top of every shaft or hatchway under the sheaves and machinery, shall be covered with a floor or grating of incombustible material capable of sustaining a load of not less than seventy-five (75) pounds per square foot with a factor of safety of four; this floor or grating in freight elevator shafts in non-fireproof buildings may be of wood, and in fireproof buildings the machinery may be bolted to three and one-half (3½) inches thick creosote impregnated plank.

On traction types of elevators, the screens under the secondary sheaves, which are located below the floor of the pent house, must extend under the entire sheaves and must not cover more than one-half of the area of the shaftway, unless there is sufficient room for a man to stand between the screen and the pent house floor.

All freight elevator cars must be equipped with a covering over the top, either solid or made of wire screen not less than No. 10 wire, and with mesh not over one inch. The part of such covering which faces the opening to the shaft, must be constructed with a section not less than 18 inches in width and extending the width of the opening to the shaft. Such section must be so attached with hinges to the screen that it will rise when it meets with an obstruction as the car descends.

Sec. 9. Supports for Overhead Work.

All beams for the support of overhead work for all elevators hereafter constructed, shall be of iron or steel,

and such beams over all passenger elevator shafts and over all elevator shafts in fireproof buildings, shall be supported on walls or continuous columns of fireproof material which shall rest on concrete or masonry foundation above the level of the floor on which they are placed, such beams over freight elevator shafts in non-fireproof buildings may be supported by wooden posts not less than eight by eight (8x8) inches, which shall rest on concrete or masonry foundation.

Sec. 10. Guide Posts and Rails.

Car guide posts and rails and counterweight rails for all passenger elevators, shall be of wrought steel of a weight of not less than fourteen (14) pounds per linear foot for car post guide rails, and not less than six and three-quarter ($6\frac{3}{4}$) pounds per linear foot for counterweight rails, and the same size shall be required for wrought steel rails of freight elevators of over twenty (20) square feet and less than fifty (50) square feet of platform, or over twelve hundred and fifty (1,250) pounds capacity; freight elevators of smaller area of platform, or less capacity with wrought steel rail shall have car post guide rails and counterweight rails of a weight not less than six and three-quarter ($6\frac{3}{4}$) pounds per linear foot; freight elevators of more than fifty (50) square feet area of platform shall have the fourteen (14) pound car guide post rails reinforced by continuous wrought steel member of not less than nine and three-quarter ($9\frac{3}{4}$) pounds per linear foot.

Elevator and counterweight guides shall be securely fastened and reinforced with proper backing or additional bracing between floors if necessary to prevent spreading, when the car safety device is applied with full load on the platform.

In place of wrought steel car post guide rails for freight elevators in non-fireproof buildings with a car travel not to exceed thirty-five (35) feet, combination of wrought steel and wood rails will be permitted of the following minimum dimensions:

For elevators of fifty (50) square feet of area of platform or less, or four thousand (4,000) pounds capacity or less, two three by three by three-eighth ($3\times3\times\frac{3}{8}$)

inches steel angles with two and three-eighths by two and three-eighths ($2\frac{3}{8} \times 2\frac{3}{8}$) inch maple guide strips.

For elevators of more than fifty (50) square feet and less than one hundred and twenty (120) square feet area of platform or over four thousand (4,000) pounds capacity, two three by four by three-eighths ($3 \times 4 \times \frac{3}{8}$) inches steel angles with two and three-quarter inches by two and three-quarter ($2\frac{3}{4} \times 2\frac{3}{4}$) inches maple guide strips.

For elevators of more than one hundred and twenty (120) square feet area of platform, two three and one-half by five inches by three-eighths ($3\frac{1}{2} \times 5 \times \frac{3}{8}$) steel angles with three and one-half by three and one-half ($3\frac{1}{2} \times 3\frac{1}{2}$) inches maple guide strips.

All steel angles shall have a wood filler between them of not less than three and one-half by three and one-half ($3\frac{1}{2} \times 3\frac{1}{2}$) inches.

The combination wood and steel counterweight rails shall have single angles of not less than three by four by three-eighths ($3 \times 4 \times \frac{3}{8}$) inches with maple guide strips of not less than one and one-half by one and one-half ($1\frac{1}{2} \times 1\frac{1}{2}$) inches.

Hand power elevators shall not be required to have steel or combination wood and steel guide posts and rails, but in place thereof shall have wooden guide posts of not less than six by six (6x6) inches with maple guide strips not less than one and three-quarters by one and three-quarters ($1\frac{3}{4} \times 1\frac{3}{4}$) inches and wooden counterweight rails of not less than three and one-half by three and one-half ($3\frac{1}{2} \times 3\frac{1}{2}$) inches with not less than one and one-quarter by one and one-quarter ($1\frac{1}{4} \times 1\frac{1}{4}$) maple guide strips.

Sec. 11. Capacity of Machinery.

All passenger elevators shall have hoisting machinery capable of lifting a live load of not less than seventy-five (75) pounds per square foot of car floor area.

Hand power elevators with a greater capacity than two thousand (2,000) pounds will not be permitted.

Hand power elevators with more than thirty-five (35) feet travel will not be permitted except where elevators are placed on the outside of the building, and no per-

son but the operator shall be allowed on the platform while it is in motion, and a notice shall be posted at each floor landing by the owner or manager of them forbidding persons to ride on such platform.

Provision shall be made on all elevators so that same can be controlled from platform.

Sec. 12. Ropes and Cables.

All hoisting and counter weight cables used on elevators shall be standard, or better quality, of iron or steel wire, composed of six strands and a hemp center, nineteen (19) wires to the strand.

The factor of safety for all new hoisting ropes for passenger elevators shall be not less than eight (8) and for all hoisting ropes for freight elevators and counterweights the factor of safety for new ropes shall not be less than six (6).

If ropes or cables are exposed to the action of the elements, the factor of safety shall be increased twenty-five (25) per cent of the above; and where any rope or cable shall have deteriorated twenty-five (25) per cent, it shall be considered unsafe.

The following are adopted as the standard for sheaves for all hoisting cables or ropes of given diameter.

TABLE FOR PASSENGER ELEVATORS.

Size of rope.	Minimum diameter of drum or sheave.	Maximum load on one cable.
$\frac{1}{2}$ inch	20 inches	1,100 pounds
$\frac{3}{8}$ inch	22 inches	1,330 pounds
$\frac{5}{8}$ inch	24 inches	1,700 pounds
$\frac{3}{4}$ inch	30 inches	2,500 pounds
$\frac{7}{8}$ inch	36 inches	3,200 pounds
1 inch	40 inches	4,000 pounds

TABLE FOR FREIGHT ELEVATORS.

Size of rope.	Minimum diameter of drum or sheave.	Maximum load on one cable.
$\frac{1}{2}$ inch	20 inches	1,500 pounds
$\frac{3}{8}$ inch	22 inches	1,800 pounds
$\frac{5}{8}$ inch	24 inches	2,250 pounds
$\frac{3}{4}$ inch	30 inches	3,000 pounds
$\frac{7}{8}$ inch	36 inches	4,000 pounds
1 inch	40 inches	5,000 pounds

All cars and counterweights hereafter installed shall be suspended on not less than two cables each, but passenger elevators, cables of which do not wind around a drum, shall not have less than four hoisting cables.

All ropes and cables shall be independently fastened at their terminals to the overhead beam of the car, and the counterweight cables independently fastened to the weights wherever possible, and the lifting and counterweight cables shall have at least one and one-half turn of the cable on the drum when car has run its limit.

All passenger cars shall have car counterweights, and electric elevators, shall have car counterweights and drum counterweights. All counterweights shall have four bolts through each set with lock nuts and cotter-pins at each end, at least two bolts shall pass through all fillers or sub weights, unless counterweights are built in steel frames, and such equipment have two cables to each counterweight as well as two cables to the hoist frame of the car. Where drum counterweight cables run through or pass by the car counterweights, they shall be provided with a suitable covering to prevent their chafing and wearing on the counterweights.

Cable drive or traction electric machines may be exempt from the double counterweight system, but a plan of the weights and cables connecting same shall be submitted to the Inspector of Buildings for approval, and there shall not be less than four cables from the car when the rated capacity is not over twenty-five hundred (2500) pounds and six cables from the car when the rated capacity is greater than twenty-five hundred (2500) pounds.

Sec. 13. Shut-off and Brake.

All electric elevators and electric dumbwaiters shall be provided with an overload and no-voltage circuit breaker mounted or attached to the controlling switchboard; these circuit breakers for electric passenger elevators shall be provided with two (2) connections of special construction in addition to the above feature, and same shall be connected in series with the brake solenoid so that when the circuit breaker is

open the coil of the brake magnet will have an open circuit, the object being that the circuit breaker when open will instantly affect the brake magnet and cause the brake to be applied to the machine.

Other apparatus equally efficient will be accepted in lieu of that described in this section, and mechanical controlled brakes will be permitted for electric freight elevators of a speed not exceeding seventy-five (75) feet per minute, and for electric dumbwaiters of a speed not exceeding sixty (60) feet per minute.

Every power driven elevator shall be provided with an automatic shut-off which shall stop it at its lowest and its highest landings independent of the operating cable. All electric passenger elevators shall be provided with electric switch control and shall be operated by the car switch that automatically centers itself and stops the car gradually when released by the operator.

In addition to the stop motion limiting device on the machine when same is connected to the drum by an intermediate or secondary motion, all electric elevators shall be equipped with electric hatchway limit switches so connected to the controller that should the car travel beyond the normal limits at the top or bottom of the shaft, the current will be cut off from the motor and the brake applied and the car brought to a gradual stop.

Hydraulic elevators shall have an automatic shut-off working independent of operating cable or valve.

All hand power elevators shall have a limit stop at the top.

Sec. 14. Cable Stops.

All elevators, except hand power elevators, the cables of which wind around a drum, shall be provided with an automatic trip or slack cable stop and automatic brake of sufficient strength to hold the car at any point.

Sec. 15. Safety Floor Stops.

All freight elevators and power-driven dumbwaiters shall be provided with a safety device by which persons using the elevator at one floor can lock the operating cable to prevent the moving of the elevator by persons on another floor during the process of loading or un-

loading, and such operating cable shall be provided with a suitable guard or covering where sheaves lead the cable from the hatchway to the machine.

All belt power, electric and hand cable controlled elevators shall be provided with a centering rope.

Sec. 16. Safety Devices.

All elevators and mechanical devices except dumb-waiters shall be provided with an efficient device to secure their safe operation and to prevent the cab, car or platform of such elevator or mechanical device from falling, and to secure the safety of the cab, car or platform and its load in case it does fall. All power driven elevators and mechanical devices whose travel exceeds one story or fifteen (15) feet, shall also be provided with a speed governor, such speed governor and other devices shall be subjected to a practical test so as to determine the efficiency of such safety devices. All safety devices shall bring the car to a gradual stop within ten (10) feet after the safety governor throws in, and all governors shall have a brass tag attached stating the speed at which it grips or sets the safety cable.

Sec. 17. Car and Platform.

The cage of every passenger car shall be constructed of metal or other incombustible material, except that floor covering may be of wood. There shall be no glass or porcelain used in the structural or ornamental parts of the cage. The use of glass and porcelain in elevator cars for general public use shall be confined to the covering of certificates of inspection, certificate of operators, annunciators and the illuminating lamps. Mirrors in elevators are strictly prohibited.

The cage of the car shall be constructed with solid panels up to a height not less than three (3) feet six (6) inches above the floor of the car, and that part of the cage at the counterweight side shall be a solid panel to the ceiling of the car.

In every passenger elevator there shall be placed a metal hand rail one (1) inch in diameter not less than three (3) feet above the floor, on all sides not having door openings or seats. The canopy or roof of every passenger elevator car shall be so constructed

that the whole or a portion thereof measuring not less than twenty by thirty (20x30) inches can be readily removed.

The grill work of the cage of the car shall not have greater open spaces than one (1) inch in width.

Passenger elevators shall not have any freight compartment either below or above the car.

Freight elevator car platforms shall be wainscoted not less than six feet high on all sides except where operating cable is located and on the loading and unloading sides:

All passenger and freight elevators except sidewalk and hand power elevators shall have a gas or electric light attached to the car, traveling with it and kept lighted when daylight is insufficient.

All passenger and freight elevators and power driven dumbwaiters shall be equipped with a flashlight or other annunciators or push buttons to operate an electric bell or other signal system of equal efficiency.

All elevator platforms shall have a factory of safety of not less than four (4).

Sec. 18. Wiring.

All apparatus under these regulations using electric current shall have all wiring construction throughout placed in steel or iron rigid conduits with conduit fittings. All switches and fuses in connection with electric elevators shall be placed in metal cabinets near the machine. Where wires branch off on the back of switchboards and at the brake solenoid and similar places where the metal piping cannot possibly be used, the wires shall be durably taped or enclosed in circular loom insulating material, and where wires are run together they shall be durably taped in the form of a cable and well painted with insulating compound.

Sec. 19. Accessibility.

Every elevator shall be located, constructed and installed in such a manner as to give to the Elevator Inspector easy and safe access to all its principal parts.

Sec. 20. Time to Conform.

All elevators, dumbwaiters and mechanical devices in existence at the time of the passage of the ordinance

Elevators of fireproof buildings containing hotels, shall, upon written notice given by the Inspector of Buildings to the owner, lessee or manager of a building or premises containing such elevator, dumbwaiter or mechanical device, be made to comply within the time limit given in the notice.

hospitals, lodging houses or tenements higher than two stories above the basement, or containing retail stores higher than two stories above the basement of a floor area exceeding ten thousand (10,000) square feet, shall have their enclosures made to comply to the provisions of Section 2. Where the machinery of the elevator is moved to a different location or materially altered, or where the shaftway or pent house is materially altered or extended, or where the capacity of the elevator is materially increased, such alterations shall be considered the same as a new installation and shall bring the moved or altered parts under the orders for new installation.

Sec. 21. Permits.

Before proceeding with the construction, erection or alteration of any elevator, dumbwaiter or mechanical devices included in this ordinance, or for any repairs of the same exceeding a cost of ten (10) dollars, a permit shall first be obtained from the Inspector of Buildings by the owner or his agent of the premises whereon the elevator is located, or is to be installed; before the Inspector of Buildings shall issue such permit, an application shall be filed with him by such owner or agent, together with plans and specifications showing all details of location, shaftways and their enclosure, kind of machine or mechanical device, size of all ropes, sheaves, drums and supports, also speed and capacity of car and platform, type of safety device, motive power, pressure tank and pressure carried thereon, cylinder and plunger, number of volts and amperes of electric current of motor used. If such plans and specifications shall show that such elevator, dumbwaiter or mechanical device is to be constructed or erected, or altered in conformity with the provisions of this ordinance, the Inspector of Buildings shall approve of the same and shall issue a permit to such applicant, and

for which permit for alterations exceeding a cost of fifty (50) dollars and for new installations, a fee of two dollars shall be paid into the city treasury, and said permit shall be duly signed by the City Treasurer and the Inspector of Buildings; this fee shall be known as a permit fee and will cover all fees for inspection; but no fee shall be required to be paid for a permit for the repairs of any elevator, dumbwaiter or mechanical device, and no fee shall be required to be paid for a permit for alterations costing less than fifty (50) dollars.

No permit shall be required for a hand power dumbwaiter the car or the platform of which does not exceed four square feet on any one shelf, and which is to be located in a building not higher than two stories above the basement or grade, nor for any hand power dumbwaiter which is to be located in a residence.

No permit will be issued for the installation of any passenger elevator having belt or chain drive, nor shall the use of such drive on such elevator be permitted, except for freight elevators used occasionally for passenger service and not exceeding a speed of seventy-five (75) feet per minute.

Sec. 22. Inspection and Certificate.

Whenever the construction, erection or alteration of an elevator, dumbwaiter or mechanical device for which a permit has been issued has been completed, the owner or his agent shall notify the Inspector of Buildings in writing, who shall then cause an inspection and test of same to be made, and under no circumstances shall such elevator, dumbwaiter or mechanical device be used for any purpose whatsoever, until such inspection has been made and a certificate of inspection issued therefor.

Sec. 23. Inspection and Notice of Repairs.

All persons owning or having control of elevators, power driven dumbwaiters or mechanical devices as defined in this ordinance, shall carefully examine the same and their appliances at least twice every week, and shall carefully examine freight elevators exceeding the speed of seventy-five (75) feet per minute and all passenger elevators at least once every day, and

upon the discovery of any defects or impairments tending to endanger life, such persons shall immediately stop the operation of such defective elevators, power driven dumbwaiters or mechanical devices, and at once notify the Inspector of Buildings of any and all defects. The Inspector of Buildings shall, upon receiving such notice, cause an inspection to be made without delay, and shall give a notice in writing to such person owning or controlling such elevator, power driven dumbwaiter or mechanical device, stating in detail the necessary repairs or alterations to be made, and giving a reasonable time limit to finish the same. No fee shall be required to be paid for this inspection. A permit shall be obtained as required by Section 21, and the elevator, power driven dumbwaiter or mechanical device shall not be used until an inspection is made by the elevator inspector at the expiration of the time limit, and if such inspection shows the repairs or alterations completed and such elevator, power driven dumbwaiter or mechanical device is in a safe condition, a certificate shall be issued.

The cessation of operation, the notification to the Inspector of Buildings, the inspection by him and the issue of the certificate shall not be required for the ordinary repairs necessary for the maintenance of elevators, dumbwaiters or mechanical devices.

Sec. 24. Periodical Inspections of Elevators.

Every power driven elevator in the city of Milwaukee shall be examined by the Elevator Inspector at least once in every six months, and all hand power elevators, power driven dumbwaiters or mechanical devices and all sidewalk elevators shall be inspected at least once each year; should any defects be found in any part of any elevator, power driven dumbwaiter or mechanical device which would tend to impair its safety, or endanger life or limb by the continued use of the same, the Elevator Inspector shall inform the person in charge of such defective elevator, and such elevator, power driven dumbwaiter or mechanical device shall forthwith be closed for use and service by said Elevator Inspector; the Inspector of Buildings shall then immediately cause notice in writing to be served upon the owner or

his agent and upon the lessee or any other person or persons having control or management of such elevator, power driven dumbwaiter or mechanical device, which notice shall contain a statement in detail of the necessary repairs or alterations to be made, and such elevator, power driven dumbwaiter or mechanical device shall not be put in use or service until it shall have been inspected and certificate issued by the Inspector of Buildings stating that such elevator, power driven dumbwaiter or mechanical device has been inspected and found safe.

In case of minor defects found upon inspection by the Elevator Inspectors, the Inspector of Buildings may allow the use of such elevator, power driven dumbwaiter or mechanical device until the expiration of the time limit stated in the notice to make repairs.

The word "safe" wherever used in this ordinance, shall be taken to mean, safe to carry any load up to the capacity named in the certificate.

The notice to make repairs or alterations shall state in detail the repairs to be made. It shall also state a reasonable limit of time within which such repairs or alterations shall be completed; upon the expiration of the time limit an inspection shall again be made, and if the repairs are not completed at that time the elevator, power driven dumbwaiter or mechanical device shall be closed for further use and be kept closed until repairs are completed, and until a further inspection or inspections are made.

Sec. 25. Certificate to Be Posted.

The last certificate issued by the Inspector of Buildings shall be placed in a frame and hung in a conspicuous place in the car of the elevator for which such certificate was issued.

The manufacturers of all elevators hereafter installed shall cause to be fastened in each car a metal plate having suitable raised letters not less than one inch long, which shall prescribe the number of pounds weight such elevator, power driven dumbwaiter or mechanical device has the capacity to carry, after proper test is made in the presence of the Elevator Inspector.

Sec. 26. Elevator Operator, Certification and Qualification.

No person shall operate any power driven elevator in the City of Milwaukee without first being duly certified thereto, and no owner, lessee or agent of any building shall permit, or cause any such elevator to be operated or put in motion, unless by such certified person as herein provided. Application for such certificate shall be made to the Inspector of Buildings on blank forms furnished by him to such applicant; upon the return of the same, properly signed by the Elevator Inspector, the Inspector of Buildings shall thereupon issue said certificate.

The requirements of this section shall not apply to licensed engineers, elevator builders nor to persons operating push button, automatically controlled type of elevators.

Every such certificate shall be posted in a conspicuous place in or near the elevator operated by the certified operator. Whenever the Inspector of Buildings shall become satisfied that the person engaged in operating any elevator is disqualified from any cause to continue to operate the same, he shall revoke the certificate issued to such operator.

The qualifications necessary for persons who now are, or shall hereafter be placed in charge of operating any passenger or power driven freight elevator in the City of Milwaukee, are hereby prescribed, and no person shall be employed for such purpose or engage therein unless he be duly certified thereto as provided in this ordinance.

1. He shall demonstrate his efficiency in the running of such elevator to the satisfaction of the Elevator Inspector.

2. He shall not be less than eighteen (18) years of age.

Sec. 27. Accidents to Be Reported.

In case of any accident whereby any person is injured or machinery of elevator is damaged, it shall be the duty of the owner, agent, operator or the engineer of such elevator or any one of them to immediately report such accident in writing to the Inspector of

Buildings; such report shall contain a detailed statement as to the cause and nature of such accident, and shall contain the names of injured persons and the nature of injuries sustained, and it shall be the duty of the Inspector of Buildings, his assistants or elevator inspectors to immediately make an examination into the cause of such accident and to record a full and detailed account thereof.

Sec. 28. Inspectors, How Appointed.

The Inspector of Buildings of the City of Milwaukee is hereby authorized to appoint one or more persons from eligible lists furnished him by the City Service Commission, who shall thereafter be designated, and known as Inspector, or Inspectors of Elevators, who shall examine all passenger and freight elevators, dumb-waiters, hoists, mechanical devices and their enclosures as defined in Section one (1) of this ordinance, and shall make a report in writing of such examinations as hereinbefore provided. The number of such inspectors shall be subject to the approval of the Common Council of the City of Milwaukee, and such person or persons eligible to such positions as Elevator Inspector shall have a practical knowledge of elevators and all machinery appertaining thereto.

Sec. 29. Power of Inspectors.

The Elevator Inspector or Inspectors, and others duly authorized by the Inspector of Buildings, shall have the power and they are hereby authorized to enter any building or premises in the City of Milwaukee without hindrance from anyone, for the purpose of examining elevators and for the enforcement of the provisions of this ordinance, and the engineer or operator having charge of any elevator, shall assist such inspector or other duly authorized person or persons to such extent that he or they may be able to make careful and thorough examination of every portion of the operating machinery, supports and enclosures connected with such elevator.

Sec. 30. Penalty for Violation.

Any person, firm or corporation owning, controlling or managing any building, or premises wherein or

whereon anything in violation of this ordinance shall be placed, or shall exist, and any person employed who shall assist in the commission of any such violation, and all persons who shall violate any of the provisions of this ordinance or fail to comply therewith, or any requirement thereof, or who shall build in violation of any detailed statement of specifications or plans submitted and approved thereunder, or any certificate or permit issued thereunder, shall for each and every such violation or non-compliance be guilty of a misdemeanor, and upon conviction thereof shall be punished by a fine of not less than five (5) dollars nor more than one hundred (100) dollars or by imprisonment in the House of Correction not less than fifteen (15) days nor more than sixty (60) days, or by both fine and imprisonment, in the discretion of the court.

Sec. 31. Repeal.

All parts of ordinances contravening the provisions of this ordinance are hereby repealed.

Sec. 32. Ordinance to Take Effect.

This ordinance shall take effect and be in force from and after twenty days following its passage and publication.

Passed August 4, 1913.

File Number 5447.

151—AN ORDINANCE

Regulating the Business Section and Fire District of the City of Milwaukee.

The Mayor and Common Council of the City of Milwaukee do ordain as follows:

Section 1. All that part of the City of Milwaukee embraced within the following limits, shall hereafter be known as the Business Section and Fire District.

Sec. 2. Slaughter houses, rendering plants and rag shops shall not be permitted to be erected or maintained within the limits of the City of Milwaukee.

Sec. 3. The term Business Section as used herein shall mean:

(a) That all buildings within this section or portion of the city, being within the described boundaries may

be occupied or maintained for any purpose whatsoever, (if in conformity with all ordinances governing the construction of such buildings.)

(c) Nothing herein contained shall prohibit the erection of residences within this business section, providing the erection of such residences conform to the requirements for building within the fire district.

(d) Livery, boarding or sales stables, gas houses, gas reservoir or holders, paint, oil or varnish works, salesroom or storage room for automobiles or garages for the keeping of automobiles for hire may be built within that portion of the city not set aside for business purposes, providing that person, firm or corporation desiring to build, remodel or maintain such building for the purpose of a livery, boarding or sales stable, gas house, gas reservoir or holder, paint, oil or varnish works, salesroom or storage room for automobiles or garage for the keeping of automobiles for hire shall first obtain the written consent of two-thirds of all real estate owners within three hundred (300) feet of the space occupied by the business proposed to be maintained.

(e) This written consent shall be accompanied by an affidavit setting forth that each name signed thereto is the signature in own handwriting of the person so named. This petition with affidavit attached, must be filed with the Inspector of Buildings, at the time that an application for a building permit, for the erection, construction or remodeling of any building for such purposes of occupancy as a livery, boarding or sales stable, gas house, gas reservoir or holder, paint, oil or varnish works, salesroom or storage room for automobiles or garage for the keeping of automobiles for hire is made.

(f) Nothing herein contained shall prohibit the erection or occupancy of a building used for business purposes outside of the within described section excepting as heretofore mentioned.

(g) Any building erected, constructed, remodeled or maintained within the city limits as livery, boarding or sales stables, gas house, gas reservoir or holders, paint, oil or varnish works, salesroom or storage room for

automobiles, or garage for the keeping of automobiles for hire must be constructed, erected or remodeled the same as a building within the fire district.

(h) The term "Fire District" as used herein shall mean:

That buildings hereafter erected or remodeled within the fire district herein described shall be erected or constructed as follows, when in conformity with the provisions of the city ordinances.

(i) Of fire-resisting materials throughout, when more than fifty (50) feet in height.

(j) The outside part and supporting division walls of all buildings must be built of brick, stone, tile, terra cotta or concrete.

(k) Buildings of steel or concrete skeleton construction, shall have curtain wall of brick, stone, tile, terra cotta or concrete.

(l) Residences not more than two (2) stories high may be built of wood frame, encased with brick, stone, tile, terra cotta, concrete, veneer or cement plaster.

(m) Roofs to be built of fire-resisting material.

Sec. 4. All that part of the City of Milwaukee, embraced within the following limits shall hereafter be known as the business section.

East District.

Sec. 5. All that section lying between and bounded by a line, beginning at the intersection of the Milwaukee river and Lake Michigan, northwesterly along the north line of the Milwaukee river to the intersection of the Milwaukee and Menominee rivers, thence northerly along the east line of the Milwaukee river, to a point 137.26 feet east of Racine street, thence southerly to a point 150 feet south of North Water street, thence westerly and southerly 150 feet east of North Water street, to the intersection of Broadway, thence southerly 150 feet east of Broadway to Biddle street, thence easterly on the south line of Biddle street to Jackson street, thence southerly 150 feet east of Jackson street to Wisconsin street, thence easterly 150 feet north of Wisconsin street to the Lake, thence southerly along the shore of Lake Michigan to the place of beginning.

All that section lying between and bounded by a line 150 feet east of the Chicago & Northwestern Ry. tracks on the east, Riverside Park on the north, 150 feet south of North avenue on the south and the Milwaukee river on the west.

North Avenue.—East from the Milwaukee river 150 feet north and south of North avenue to the intersection of Lake Drive and North avenue.

Murray Avenue.—Northerly from North avenue 150 feet east and west of Murray avenue to the intersection of Bradford and Murray avenue.

Farwell Avenue.—Southwesterly from the intersection of North avenue 150 feet east and west of Farwell avenue to the intersection of Windsor Place and Farwell avenue.

Jackson Street.—Northerly from the intersection of Jackson and Biddle street 120 feet east and west of Jackson street to the intersection of Odgen avenue and Jackson street.

Odgen Avenue.—From the intersection of Jackson street 150 feet north and south of Odgen avenue to the intersection of Farwell avenue.

Farwell Avenue.—From the intersection of Odgen avenue, northeasterly 150 feet east and west of Farwell avenue to the intersection of Brady street.

Brady Street.—From the intersection of Farwell avenue westerly 150 feet north and south of Brady street to the Milwaukee river.

West Side.

Sec. 6. All that portion of the city lying between and bounded by a line beginning at the intersection of the Milwaukee and Menominee rivers westerly along the north line of the Menominee river to the intersection of Menominee river and the South Menominee canal, to the north line of Canal street, thence westerly along Canal street to Thirtieth street, thence northerly along Thirtieth street to 120 feet north of Clybourn street, thence easterly 120 feet north of Clybourn street to Thirteenth street, thence northerly to 150 feet north of Grand avenue, thence northerly along center of alley between Twelfth and Thirteenth street extended, and the center of Sheridan Lane to a point 150 feet north

of Vliet street, thence easterly 150 feet west of Seventh street, thence northerly to a point 150 feet north of Cherry street, thence easterly 150 feet north of Cherry street, to a point 150 feet west of Third street, thence northerly to 150 feet north of Sherman street, thence easterly to the C. M. & St. P. Ry. right of way, thence northerly 150 feet west of the C. M. & St. P. Ry. right of way to Hadley, thence easterly to the Milwaukee river, thence southerly along the west bank of the Milwaukee river to the place of beginning.

Center Street.—From the intersection of Humboldt avenue and Center street, 150 feet north and south of Center street, westerly to the city limits.

Northerly from Hadley street on a line 150 feet east and west of the C. M. & St. P. Ry. right of way to the city limits on the north.

Third Street.—From the intersection of Third and Sherman streets northerly on a line 150 feet east and west of Third street to the intersection of Green Bay avenue, thence northwesterly 150 feet east and west of Green Bay avenue to the city limits.

All that part lying in and between and bounded on the east by a line 150 feet east of Eleventh street, on the north by a line 150 feet north of Walnut street, on the south by a line 150 feet north of Vliet street, and on the west by Thirteenth street.

Twelfth Street.—Starting at a point 150 feet north of Walnut street, running northerly 150 feet east and west on Twelfth street, thence northwesterly 150 feet east and west of Teutonia avenue to Alton street.

Fond du Lac Avenue.—From the intersection of Walnut street northwesterly 150 feet east and west of Fond du Lac avenue, to the city limits.

North Avenue.—From the intersection of Holton street, westerly 150 feet north and south of North avenue to the city limits.

Walnut Street.—From the intersection of Third street, westerly 150 feet north and south of Walnut street to Twenty-seventh street.

Lisbon Avenue.—From the intersection of Galena street, northwesterly 150 feet north and south of Lisbon avenue to the city limits.

Vliet Street.—From the intersection of Twelfth street, westerly 150 feet north and south of Vliet to the city limits.

State Street.—From the intersection of Twelfth street, westerly 150 feet north and south of State street to the intersection of Twenty-seventh street.

C. M. & St. P. Ry.—Starting at a point at the western city limits on the south, northeasterly and northerly 150 feet east and west of the Northern Division of the C. M. & St. P. Ry. right of way to the city limits on the north.

South District.

Sec. 7. Beginning at the intersection of Lake Michigan and the Milwaukee river, westerly along the south line of the Milwaukee and Menominee river to the intersection of the South Menominee canal, thence southerly along the west line of the South Menominee canal to Canal street, thence westerly along the center of Canal street to Twenty-seventh Street Viaduct, thence southerly along the line of the Twenty-seventh Street Viaduct to the south line of the La Crosse Division of the C. M. & St. P. Ry. right of way, thence easterly along the south line of the C. M. & St. P. Ry. right of way to 150 feet west of Seventeenth avenue, thence southerly 150 feet west of Seventeenth avenue, to 150 feet south of National avenue, thence easterly 150 feet south of National avenue, to the alley between First and Second avenues, thence southerly along the alley between First and Second avenues, to 150 feet south of Greenfield avenue, thence easterly 150 feet south of Greenfield avenue to 150 feet west of Reed street, to the Kinnickinnic river, thence southerly along the line of the Kinnickinnic river to Russel avenue, thence easterly on Russel avenue to 150 feet east of the Chicago Division of the C. M. & St. P. Ry. right of way, thence northerly 150 feet east of the Chicago Division of the C. M. & St. P. Ry. right of way to South Bay street, thence easterly and southeasterly along the center of South Bay street, to Superior street, thence easterly to Lake Michigan, thence northerly along the shore of Lake Michigan to the point of beginning.

Chicago & Northwestern Ry.—From Superior street

150 feet east and west of the Chicago & Northwestern Ry. right of way southerly to the city limits.

Kinnickinnic Avenue.—Beginning at South Bay street, southeasterly 150 feet east and west of Kinnickinnic avenue to the right of way of the C. & N. W. Ry.

Mitchell Street.—Beginning at Reed street, 150 feet north and south of Mitchell street running westerly to the intersection of Forest Home avenue, thence southwesterly 150 feet east and west of Forest Home avenue to the city limits.

Sixth Avenue.—Beginning at Greenfield avenue, southerly 150 feet east and west of Sixth avenue, to the intersection of Windlake avenue, thence southwesterly 150 feet east and west of Windlake avenue to Eleventh avenue.

Greenfield Avenue.—Beginning at the intersection of First avenue to 150 feet north and south of Greenfield avenue, westerly to Twenty-sixth avenue.

Muskego Avenue.—Beginning at the intersection of Greenfield avenue, southwesterly 150 feet east and west of Muskego avenue to the intersection of Forest Home avenue.

Eleventh Avenue.—Beginning at the intersection of National avenue 150 feet east and west of Eleventh avenue southerly to the intersection of Greenfield avenue.

National Avenue.—Beginning at the intersection of Seventeenth avenue, westerly 150 feet north and south of National avenue to the city limits on the west.

Fire District.

East Side.

Sec. 8. All that district lying in and between and bounded on the north by a line 150 feet north of Brady street, on the east by Lake Michigan, on the south by Menominee river, and on the west by Milwaukee river.

All that district lying in and between and bounded on the north by Milwaukee river, on the east by a line 150 feet east of Racine street, on the south by a line 150 feet south of North Water street and Brady street, on the west by the Milwaukee river.

All that district bounded on the north by Riverside Park, on the east by a line 150 feet east of the C. & N.

W. Ry. right of way, on the south by North avenue, on the west by the Milwaukee river.

North Avenue.—All that district lying in and between a line 150 feet north and south of North avenue, from the intersection with the Milwaukee river easterly to Lake Drive.

Murray Avenue.—All that district lying in and between a line 150 feet east and west of Murray avenue, northerly from North avenue to Bradford street.

Farwell Avenue.—All that district lying in and between a line 150 feet east and west of Farwell avenue, southwesterly from North avenue to Windsor place.

West Side.

Sec. 9. All that district lying in and between and bounded by a line, commencing at the intersection of the Menominee and Milwaukee rivers westerly along the north line of the Menominee river to its intersection of the South Menominee canal, thence southerly along the west line of South Menominee canal to its intersection with Canal street, thence westerly along the center of Canal street, to its intersection with Thirtieth street, thence northerly along the center of Thirtieth street to 120 feet north of Clybourne street, thence easterly 120 feet north of Clybourne street to a line 150 feet west of Twenty-seventh street, thence northerly 150 feet west of Twenty-seventh street to a line 150 feet south of Grand avenue, thence westerly 150 feet south of Grand avenue to the city limits, thence northerly to a line 150 feet north of Grand avenue, thence easterly on a line 150 feet north of Grand avenue to Twenty-fourth street, thence northerly to a line 150 feet north of State street, thence easterly to an alley running north and south between Twelfth and Thirteenth street, thence northerly to 150 feet north of Walnut street, thence easterly 150 feet north of Walnut street to a line 150 feet west of Third street, thence northerly to a line 150 feet north of Sherman street, thence easterly to a line 150 feet west to the C. M. & St. P. Ry. right of way. Thence northeasterly and northerly on a line 150 feet west of the C. M. & St. P. Ry. right of way to Locust street, thence easterly to the west line of the Milwaukee river,

thence southerly along the west line of the Milwaukee river to the point of beginning.

C. M. & St. P. Ry.—Commencing at Locust street on a line 150 feet east and west of the C. M. & St. P. Ry. right of way northwesterly to the city limits.

Commencing at the city limits on the west on a line 150 feet east and west of the C. M. & St. P. Ry. Northern Division right of way, northeasterly and northerly to the city limits on the north.

Third Street.—On a line 150 feet east and west of Third street from the intersection with Sherman street, northerly to the intersection of Green Bay avenue, thence on a line 150 feet east and west of Green Bay avenue, northwesterly to the city limits on the north.

Twelfth Street.—On a line 150 feet east and west of Twelfth street from Walnut street, northerly to North avenue.

Teutonia Avenue.—On a line 150 feet east and west of Teutonia avenue from its intersection with Twelfth street, northwesterly to the city limits on the north.

Fond du Lac Avenue.—On a line 150 feet north and south of Fond du Lac avenue from its intersection with Walnut street northwesterly to the city limits.

Center Street.—On a line 150 feet north and south of Center street from the intersection of the Milwaukee river on the east westerly to the city limits.

North Avenue.—On a line 150 feet north and south of North avenue, from the intersection of Holton street, westerly to the city limits.

Walnut Street.—On a line 150 feet north and south of Walnut street from the intersection of Twelfth street westerly to Twenty-seventh street.

Lisbon Avenue.—On a line 150 feet north and south of Lisbon avenue northwesterly from its intersection with Galena street to the city limits on the west.

Vliet Street.—On a line 150 feet north and south of Vliet street from its intersection with Twelfth street westerly to the city limits on the west.

State Street.—On a line 150 feet north and south of State street from the intersection of Twenty-fourth street, westerly to Twenty-seventh street.

All that district lying in and between and bounded on

the north by Walnut street, on the east by Twelfth street, on the south by Vliet street, and on the west by Fourteenth street.

South Side.

Sec. 10. All that district lying in and between and bounded by a line commencing at the intersection of the Menominee river and Lake Michigan, westerly along the south line of the Menominee river to its intersection with the South Menominee canal, thence southerly along the west line of the South Menominee canal to Canal street, thence westerly along the center of Canal street to the Twenty-seventh street viaduct, thence southerly along the line of twenty-seventh street viaduct to a point 150 feet south of National avenue, thence easterly on a line 150 feet south of National avenue to the alley between First and Second avenues, thence southerly to 150 feet south of Mitchell street, thence 150 feet south of Mitchell street easterly to 150 feet west of Greenbush street, thence southerly on a line 150 feet west of Greenbush street, to a line 150 feet south of Lincoln avenue, thence easterly to a line 150 feet east of the west line of the Kinnickinnic river, thence southerly and southwesterly along the line 150 feet west of the west line of the Kinnickinnic river and the Madison division of the C. & N. W. Ry. right of way to the city limits, thence easterly to a line 150 feet east of the Chicago division of the C. M. & St. P. Ry. right of way, thence northerly on a line 150 feet east of the C. M. & St. P. Ry. right of way to a line 150 feet south of Lincoln avenue, thence easterly on a line 150 feet south of Lincoln avenue to a line 150 feet east of Kinnickinnic avenue, thence northwesterly 150 feet east of Kinnickinnic avenue to South Bay street, thence easterly and southerly along the center of South Bay street to Superior street, thence easterly along the center of Superior street to Lake Michigan, thence northerly along the shore of Lake Michigan to the point of beginning.

National Avenue.—Beginning on a line 150 feet north and south of National avenue from the intersection of Twenty-second avenue westerly to the city limits on the west.

Eleventh Avenue.—Beginning on a line 150 feet east and west of Eleventh avenue from the intersection of National avenue southerly to Greenfield avenue.

Muskego Avenue.—Beginning on a line 150 feet east and west of Muskego avenue from the intersection of Greenfield avenue southwesterly to the intersection of Forest Home avenue.

Greenfield Avenue.—Beginning on a line 150 feet north and south of Greenfield avenue from its intersection with First avenue westerly to its intersection with Twenty-sixth avenue.

Mitchell Street.—Beginning on a line 150 feet north and south of Mitchell street from its intersection with First avenue westerly to Eighth avenue.

Forest Home Avenue.—Beginning on a line 150 feet north and south of Forest Home avenue from its intersection with Mitchell street, southwesterly to the city limits.

Sixth Avenue.—Beginning on a line 150 feet east and west of Sixth avenue from its intersection with Mitchell street, southerly to its intersection with Windlake avenue, thence southwesterly 150 feet east and west of Windlake avenue to Eleventh avenue.

Kinnickinnic Avenue.—Beginning on a line 150 feet east and west of Kinnickinnic avenue from its intersection with Lincoln avenue southeasterly to its intersection with the C. & N. W. Ry. right of way.

C. & N. W. Ry.—Beginning on a line 150 feet east and west of the C. & N. W. Ry. right of way and its intersection with Superior street, southeasterly to the city limits—shall constitute the fire district, and all buildings within or without all public parks or all public or quasi public properties within the City of Milwaukee.

Sec. 11. When lots are more or less than 150 feet in length from the business section or fire district lines as described, herein to street, alley line, right of way or dock line on which lots abut, all such lots abutting on such business section or fire district line shall be within the business section or fire district.

Sec. 11a. Any person, firm or corporation, violating any of the provisions of this ordinance shall, upon conviction, be liable to a fine of not less than \$10.00 nor

more than \$200.00 or, in default thereof, to imprisonment in the house of correction for not more than six months. Each and every day's violation shall constitute a separate offense.

Sec. 12. On and after its enactment this ordinance shall rescind and replace any and all existing ordinances having to do with the business section or fire limits of the City of Milwaukee.

Sec. 13. This ordinance shall take effect and be in force from and after its passage and publication.

Passed Jan. 13, 1913.

AN ORDINANCE

Regulating the Installation of Electric Work, Electric Wiring and Aparatus in the City of Milwaukee.

The Mayor and Common Council of the City of Milwaukee do ordain as follows:

Section 1. Any person, firm or corporation wishing to engage in the construction or alteration of any electric wiring or apparatus in the City of Milwaukee shall upon payment of the sum of twenty-five (25) dollars to the City Treasurer, which sum is to be credited to the general city fund, be given a license to cover a period of one year from May 1st. Such license shall be nontransferable and shall be revoked for noncompliance with the requirements of this ordinance and shall not be renewed until the licensee has complied with all the requirements and upon payment of the sum of twenty-five (25) dollars again paid to the City Treasurer.

Sec. 2. The words "Electrical Wiring" and "Apparatus" as used in this ordinance shall be construed to include all materials, machinery and appliances used or designed to be used in connection with the utilization of electricity when connected with a source of electro motive force exceeding 20 volts. This ordinance shall not apply to the station equipment of central stations, substations or the subways of the same under a public right of way of any electric lighting power, street railway company or any corporation operating under a franchise.

Any person, firm or corporation engaged in the installation of electric signalling apparatus such as telephone, telegraph or similar appliances shall be under the jurisdiction of the electrical inspector, provided, however, that such person, firm or corporation shall not be required to first secure a permit as required in this ordinance, and further provided that such person, firm or corporation shall upon receiving formal notice from the electrical inspector, remove, repair or alter any or all wires, apparatus or appliances, which shall have been installed contrary to the rules and regulations, as provided in this ordinance and shall then pay fees for re-installation, as provided in section eleven of this ordinance.

It is further provided that telephone, telegraph or signalling wires shall not be run through hollow partitions, or under floors, in finished buildings where there are any electric wires on the concealed knob and tube plan, unless the wires are continuously encased in conduit from outlet to outlet.

Any person, firm or corporation manufacturing electrical appliances, employing permanently a competent electrician, shall not be required to have a permit for his or its testing equipment.

Any person, firm or corporation using electricity for light, heat or power and regularly employing an electrician to give his entire attention to the electric equipment, shall have their electrical installation inspected semi-annually and shall pay fees as provided in section eleven (11) of this ordinance. A record shall be kept on forms provided by the electrical inspector of all permanent alterations made during the period from one periodical inspection to the next, and shall be submitted to the electrical inspector whenever the periodical inspection is made.

No permit shall be required for repairs made necessary for the proper maintenance of an existing installation, nor for alteration or extension of an existing circuit not exceeding 660 watts when made by a licensee.

Contractors shall keep a complete record of the work done where a permit is not required, on forms furnished

by the electrical inspector, which record shall be open for inspection at all times.

Sec. 3. It shall be the duty of the electrical inspector to enforce the provisions of this ordinance.

A record shall be kept of all official work, said record shall be so arranged as to afford prompt information concerning the condition of any electrical equipment at the time of the last inspection.

Sec. 4. The electrical inspector shall have the right to enter any building, premises or subway in the discharge of his official duties, and for that purpose shall be given prompt access on notification to the proper authority.

The electrical inspector shall issue permits for the execution of electrical installation for light, heat or power upon the filing of proper application, which shall be made on blanks furnished by the electrical inspector prescribing the nature of the work, and no work shall be done until a permit is obtained. This section shall apply in all cases as noted in section 2.

Sec. 5. In emergency work the person, firm or corporation doing or causing such work to be done shall report the same to the electrical inspector within two days after beginning work and such work shall be done in accordance with the provisions of this ordinance.

Sec. 6. Concealed electric wiring for light, heat or power shall hereafter be installed in metallic conduits in any building except residences containing not more than 2 families or boarding or lodging houses containing not more than six persons.

All electric wiring for light, heat or power in basements or show windows and in places of assemblage for more than 100 persons shall be installed in metallic conduits, the term place of assemblage shall not apply to factories or work shops.

Sec. 7. Wiring for which a permit has been issued shall not be concealed until accepted by the electrical inspector.

Current shall not be turned on any electrical wiring until a certificate of inspection has been issued by the electrical inspector.

Sec. 8. Any person desiring to place any pipe, sheet metal or other conducting material within less than 5 inches of any electric light, heat or power conductors which is not encased in approved metal conduits or steel armed cables in so-called concealed wiring or which is to be concealed, shall first secure a special permit from the electrical inspector so to do. In so-called open knob, cleat or moulding construction the materials mentioned in above paragraph shall not be placed closer than 2 inches to any wire without first securing a permit, as required in above paragraph.

Sec. 9. The electrical inspector shall cut off the electric current from any appliance which is found to be in an unsafe condition and no person, firm or corporation shall reconnect any appliance thus cut off, until written permission is given by the electrical inspector.

Sec. 10. The fees for permit for electrical equipment, including inspection, shall be as follows and shall be paid to the City Treasurer and credited to the general city fund.

Sec. 11. Outlets in any one building or structure shall be charged at a rate of 10 cents each.

Lights in any one building or structure shall be charged at the rate of 5 cents each.

Installation of motors above $\frac{1}{4}$ horse power in any one plant shall be charged at the rate of 10 cents per horse power or fraction thereof.

Note. For rating of motors the manufacturers' stamp will be taken.

Rectifiers and transformers one (1) dollar each.

Generators including switchboard shall be charged at the rate of 5 cents per kilowatt.

Arc, Mercury and search lights, 25 cents each.

Studded lights, including their individual outlets shall be charged at the rate of 5 cents each.

Stage lights, including their connections at the rate of 5 cents each light.

Stage pockets, spot lights, stereopticon and moving picture machines, each machine at the rate of one (1) dollar.

Work where temporary permits are issued a charge of \$1.00 per hour or fraction thereof shall be made.

Sec. 12. Any person, firm or corporation, found guilty of violating any of the provisions of this ordinance, or neglecting or refusing to comply with any order or notice of the electrical inspector made pursuant to the provisions of this ordinance, and any officer or agent of any corporation which shall violate any of the provisions of this ordinance, or refuse to comply with any order or notice of the electrical inspector made pursuant to the provisions of this ordinance shall be punished by a fine of not less than five (5) dollars, nor more than two hundred and fifty (250) dollars and the costs of action for each and every offense, and in default of payment of such fine by imprisonment in the house of correction of Milwaukee County not less than ten (10) days nor more than ninety (90) days, or until such fine and costs shall be paid.

Sec. 13. This ordinance shall take effect and be in force from and after sixty (60) days following its passage and publication.

Passed December 9, 1913.

AN ORDINANCE

To Regulate the Installation and Construction of Internal Combustion Engines.

The Common Council of the City of Milwaukee do ordain as follows:

Section 1. All internal combustion engines shall rest on rigid, incombustible foundations, and no gasoline engine shall be installed in any building above the first story. The weight of an engine installed on any floor shall not exceed fifty (50) per cent of the safe superimposed load of the floor. Where any internal combustion engines are placed in any building having wooden floor construction, the engine shall be enclosed in a fireproof compartment, having floor and ceiling ventilation each equal to a sectional area of not less than ten (10) square inches for each two hundred (200) cubic feet of

space, or fraction thereof. Corrugated iron shall not be considered as fireproof under this ordinance.

Sec. 2a. Tanks installed outside of the building shall be not less than two (2) feet below the surface, entirely surrounded by earth well tamped in place, and not more than two (2) tanks shall be allowed within twenty-five (25) feet of a building, unless such building shall be fireproof, and then not more than six (6) tanks shall be placed within twenty-five (25) feet of the building. The top of the tank shall be below the lowest pipe in the building used in connection with the equipment.

Tanks installed inside of the building shall be buried two (2) feet below the level of the basement floor, imbedded in the earth and covered by at least two (2) feet of earth or concrete, and not more than two (2) tanks shall be allowed under the building.

No tank shall be installed underneath a building, any part of which is used for residence, hotel, lodging purposes, or place of assemblage.

b. No tank of greater capacity than three hundred (300) gallons shall be permitted.

c. Three hundred (300) gallon tanks shall be constructed of at least No. 12 U. S. standard gauge galvanized steel or at least one-quarter ($\frac{1}{4}$) inch black open hearth tank steel. Smaller tanks may be made of proportionately smaller gauge, but none shall be made of a smaller gauge than 16 U. S. standard.

d. Tanks shall be coated on the outside with rust resisting material, and shall not have any openings or pipe connections except in the top thereof. They shall not be connected either directly or indirectly with any public or private sewer.

e. Filling pipes shall be made of galvanized wrought iron pipe not less than one and one-quarter ($1\frac{1}{4}$) inches in diameter, which shall enter at the top of the tank. Pipes shall terminate with a screw cap securely locked. Where tanks are located under the building, the filling pipes shall run to the outside of said building and terminate with a screw cap, the same to be securely locked. Where filling pipes run to the sidewalk, street, alley or other public highway, they shall terminate with

a screw cap and be protected with a cast iron box, the same to be flush with the sidewalk, street, alley or other public highway, and shall be placed as near the curb line as possible, and shall not be placed upon what is known as the street proper. The cover of said box shall be securely locked when not in actual use.

f. Tanks shall be provided with a one (1) inch or larger galvanized wrought iron vent pipe, the same to be connected with the top of the tank, and the connection at the tank to be provided with a brass wire screen of 30 mesh. Vent pipes of tanks installed inside of buildings shall be carried to the outside of the building to at least two (2) feet above the roof of the same and terminate in a return bend, the opening of which shall be covered with a brass wire screen of 30 mesh. Vent pipes of tanks installed outside of building shall be closed by a screw cap when not in use, and enclosed in a metal box that is flush with the surface of the ground, when on a public highway, and shall be put as near the curb line as possible, and not upon what is known as the street proper, and shall be kept locked when not in use.

g. Pipe connecting the tank with the pump shall be galvanized wrought iron pipe and enter at the top of the tank and drain into the same and shall be buried at least eighteen (18) inches below the surface and be thoroughly protected.

Sec. 3. All gasoline shall be drawn from the tank by means of a suction system or pump which shall have a shut-off valve with a ground key and an automatic check valve between the pump and the tank. The return pipe from the pump to the tank shall be one size larger than the supply pipe.

Sec. 4. The illumination of rooms in which gasoline engines are installed shall have no open flame less than seven (7) feet above the floor. If electric lighting is used, wires shall be run in rigid fireproof conduits. Lamps shall be vapor-proof with keyless sockets, and switches, plugs and safety fuses shall be located near the entrance, at least four and one-half feet above the floor, in a fireproof cabinet.

Sec. 5. No tank or internal combustion engine shall be installed until application, with plans and specifications, showing full detail of location and construction of tank and of connections, or of installation of internal combustion engine, has been submitted to the Inspector of Buildings, who shall have a reasonable time thereafter to examine said plans, and who shall give a permit after the applicant has paid into the city treasury the sum of three dollars (\$3.00) as a permit fee for the installation of each internal combustion engine, and two dollars (\$2.00) as a permit fee for the installation of each tank, which sum or sums shall be credited to the general city fund, if said plans are according to this ordinance and other ordinances which may be applicable, and the giving of a permit by the Inspector of Buildings in violation of this or any other ordinance shall not be a defense to a violation of any of the provisions herein named. Any person, firm or corporation installing gasoline or volatile liquid tanks pursuant to this ordinance, shall again notify the Inspector of Buildings before covering or enclosing the same, and he shall cause an inspection to be made of the same and connections, and the same shall not be covered up or enclosed or used before they are approved by the Inspector of Buildings as fulfilling the requirements of this ordinance, but such approval by the Inspector of Buildings shall not be considered a defense to a violation of any of the provisions of this ordinance.

Sec. 6. On and after the passage and publication of this ordinance, it shall rescind and replace any and all existing ordinances having to do with the construction, location and maintenance of internal combustion engines, but this ordinance shall not apply to any internal combustion engine heretofore installed and in use.

When material alterations are made in the location of internal combustion engines heretofore installed, the provisions of this ordinance shall be in force. The maintaining after installing or the attempting to install, contrary to this ordinance, shall be unlawful, and each and every day's violation of any of the provisions of this ordinance shall be a separate offense.

Sec. 7. Any person, firm or corporation owning, con-

trolling or managing any building or premises wherein or whereon anything in violation of this ordinance shall exist or shall be placed, or any person, firm or corporation employed who shall assist in the commission of any violation of any of the requirements hereof, or who shall build contrary to the plans and specifications submitted to the Inspector of Buildings, provided such plans and specifications are in accordance with this ordinance, or any person, firm or corporation who shall neglect to do each and every act required herein, whether such act has been approved by the Inspector of Buildings or not, and shall for each and every day's violation or non-compliance be liable to a fine of not less than five (\$5.00) dollars nor more than five hundred (\$500.00) dollars, or, in default of fine, by imprisonment in the house of correction not less than one (1) day nor more than six (6) months.

Sec. 8. This ordinance shall take effect and be in force from and after its passage and publication.

Passed July 31, 1911.

Published August 8, 1911.

File Number 4864.

98—AN ORDINANCE

Regulating Boilers, Heating Apparatus, Ovens, Kilns, etc.

Section 1. Boiler rooms containing boilers operated with more than ten (10) lbs. steam pressure per square inch, or boilers installed with more than 750 square feet heating surface in total, shall be of fireproof construction throughout.

Sec. 2. All boilers, furnaces, ovens or ranges enclosed with brick shall be placed on a foundation of fireproof construction; all those which are not enclosed with brick may be set on a floor of wooden construction, provided the floor has a protected covering not less than five (5) inches thick of fireproof material on a continuous sheet metal plate not less than $\frac{1}{8}$ inch thick with riveted joints and turned up edges at least five inches high; such plate and covering shall extend beyond the heating apparatus, boiler, etc., not

less than four (4) feet in front and three (3) feet at side and rear. There shall be no woodwork within two (2) feet of any side or overhead of any boiler or furnace, etc. Any woodwork within three (3) feet of such boiler or furnace, etc., shall be covered with an incombustible covering of not less than two (2) inch solid thickness. The same requirement shall apply to portable smelting furnaces, forges, core annealing and baking ovens.

In private residences the overhead woodwork may be within fifteen (15) inches of the top of any heating apparatus, provided such top is covered with two (2) inch non-conducting covering and the overhead woodwork has an incombustible covering at least one (1) inch in thickness extended three (3) feet beyond the heating apparatus.

Sec. 3. Boilers or heating apparatus shall not be placed under the audience room or stage of a theater, school room, public hall or place of assemblage, or under any stairway or exit from any of these places, or a hospital, tenement, hotel or dormitory.

The room containing the boiler or heating apparatus in any such building shall be of fireproof construction throughout.

Sec. 4. Kitchen ranges, heating stoves and laundry stoves placed on combustible floors shall be set on legs or ventilated metal base, and shall have a metal shield underneath extending not less than one (1) foot each way beyond the stove or range. Such ranges or stoves shall not be placed within six (6) inches of any combustible partition, and if placed nearer than twelve (12) inches, such combustible partition shall be covered with a metal shield at least twelve (12) inches higher than the range or stove. Any combustible ceiling or floor constructed overhead shall be at least three (3) feet distance.

Sec. 5. Hotel and restaurant ranges which are placed on a combustible floor construction shall be set on base five (5) inches thick as called for in section 2 of this ordinance. Any combustible ceiling or floor construction overhead shall be protected by a metal hood placed not less than six (6) inches clear distance below the

ceiling and extending one (1) foot in all directions beyond the area of the range. The hood shall have a ventilating pipe of metal not less than eight (8) inches in diameter placed at least six (6) inches below if ceiling is of combustible material, and connected with a chimney flue. If such pipe must be run near or through a combustible partition the same protective coverings shall be applied as for a smoke pipe.

Sec. 6. All hearths of fire places shall be supported by trimmer arches or concrete at least four (4) inches thick and at least twenty (20) inches wide in front of the chimney breast, and at least two (2) feet longer than the width of the opening. One end of such arch shall rest on the masonry of the chimney.

The wooden forms under the arches shall be removed before plastering the ceiling underneath.

The panels and backs of a fireplace shall be of brick not less than eight (8) inches thick.

The fireplace opening shall be arched over with brick or have an iron lintel.

Sec. 7. Boilers, furnaces and ovens when set in brick in a non-fireproof room shall be encased in double brick walls and covering not less than four (4) inches thick with two (2) inch air space between.

Portable boilers, furnaces and ovens in a non-fireproof room shall have a double metal casing with at least one (1) inch air space between, or shall be covered with not less than two (2) inches thickness of incumbustible insulating material.

Sec. 8. Cold air boxes shall consist of incombustible material for a distance of not less than three (3) feet from the furnace.

Sec. 9. Dry kilns and smoke houses shall be of fire-proof construction.

Sec. 10. Smoke Pipes.

All boilers, furnaces, ovens and heating apparatus of any kind shall be connected with a chimney of brick, tile, concrete or other fireproof material, except in fire-proof buildings. No metal smoke pipe will be permitted to extend through an outside wall or through the roof. Where smoke pipes pass through a wood or plastered

stud partition or furred wall or floor they shall be surrounded either by a body of incombustible material not less than four (4) inches thick, or by a double safety thimble made of two concentric rings of sheet metal at least one (1) inch apart with provision for circulation of air between. A smoke pipe of more than twelve (12) inches in diameter shall not pass through a combustible partition.

No smoke pipe shall be concealed in a combustible partition, nor shall it be run nearer than six (6) inches to any combustible partition or nearer than nine (9) inches to any unprotected ceiling constructed of combustible material.

Smoke pipes of more than six (6) inches and not more than twelve (12) inches diameter shall be at least twelve (12) inches distant from a partition and eighteen (18) inches from a ceiling constructed of combustible material and not protected by fire resisting material.

Smoke pipes of more than twelve (12) inches diameter and not more than twenty-four (24) inches diameter, shall be at least twenty-four (24) inches from a partition and thirty-six (36) inches from a ceiling constructed of combustible material which is not protected with fire-resisting material.

Smoke pipes of more than twenty-four (24) inches diameter and not more than thirty-six (36) inches diameter, shall be at least four (4) feet from a partition and six (6) feet from a ceiling constructed of combustible material which is not protected with fire-resisting material.

Smoke pipes of more than thirty-six (36) inches diameter shall only be contained in a room of fireproof construction.

A protection of a partition or ceiling as herein specified shall consist of not less than two (2) inches hollow tile or concrete, or four (4) inches of brick, or a metal shield affording a 1½ inch ventilating air space back of the shield. In all cases the protection shall be twice as wide as the diameter of the smoke pipe; or the smoke pipe may be covered with non-combustible insulating covering not less than 1½ inches thick.

In case the smoke pipe is covered in such manner

and the partition and ceiling are protected as above, the distance the smoke pipe shall be placed from the partition and ceilings may be reduced one-fourth of the distance.

Smoke pipes carrying off the products of combustion from a gas grate may be run inside a combustible partition, and through the roof if made of two concentric pipes of not less than No. 20 galvanized iron with at least a $\frac{1}{2}$ -inch air space between these pipes, and this pipe to be not less than one (1) inch distant from any combustible material.

Sec. 11. Chimneys, Flues and Stacks.

All chimneys shall be built of brick, stone or other fireproof material, and in no case shall a chimney rest upon a flooring of wood or timber construction.

The foundation of chimneys, flues and stacks, whether inside or outside of buildings, or whether connected with the same or isolated, shall be designed and built in conformity with the provisions relating to foundations of buildings.

When the breast of a chimney or fireplace projects more than four (4) inches, it shall be started and built on the same line from the foundation. In no case shall a chimney be corbeled out more than four (4) inches from the wall, and in all such cases the corbeling shall consist of at least three (3) courses of brick.

Chimneys shall have walls at least eight (8) inches thick, unless terra cotta, fire clay or equally as good flue linings for the full height of chimney are used, in which case the walls shall be not less than four (4) inches thick. No smoke flue shall be less than 8x8 inches. Not more than two (2) stoves or two (2) furnaces shall be connected with an 8x8 inch flue, nor more than four (4) stoves or three (3) furnaces with an 8x12 inch flue.

The top of any chimney shall be not less than five (5) feet above the top of the building of which it is a part, if such roof is a flat roof, nor lower than two (2) feet above the ridge if such is a pitched roof. Every chimney shall be provided with a cleaning-out door at its base.

Sec. 12. Area of Chimneys.

Chimneys with flues larger than 250 square inches and less than 500 square inches shall have surrounding walls not less than eight inches thick of brick. Such walls for a point ten (10) feet above the inlet funnel shall have an extra lining of four (4) inches fire brick, laid in fire clay, or in place of fire brick, fire clay or equally as good flue lining; tops of such chimneys to be at least eight (8) feet above the roof, or five (5) feet above the highest part of the roof of any building within fifty feet of such chimney.

Chimneys with flues of more than 500 and less than 800 square inches shall have not less than twelve (12) inch walls for the first thirty-six (36) feet, the wall of such chimney from a point two (2) feet below to a point fifteen (15) feet above the inlet funnel shall have an extra lining of four (4) inches of fire brick laid in fire clay, or in place of fire brick, fire clay or equally as good flue lining; the top of such chimney to be at least ten (10) feet above the roof or seven (7) feet above the highest part of the roof of any building within fifty (50) feet of such chimney.

Chimneys with flues more than 800 and less than 1,800 square inches shall have surrounding walls not less than twelve (12) inches thick to the height of forty-five (45) feet, and shall have four-inch lining of fire brick laid in fire clay, with four (4) inch air space opposite the inlet funnel, the lining to commence four (4) feet below the inlet and extend twenty (20) feet above the same, to have opening from flues into the air space at top and bottom of the lining; the tops of such chimneys shall be built not less than twelve (12) feet above the roof and not less than two feet above the roof of any building within a radius of fifty (50) feet.

For chimneys with flues of greater area than 1,800 square inches the thickness of walls shall be increased four (4) inches for each increase in area of 1,000 square inches or fractional part thereof; but in all cases the surrounding walls of chimneys of any size shall be so proportioned that the brick work in the same will not be subjected to strains greater than the maximum strains for the brick work elsewhere fixed in this ordinance.

Sec. 13. Isolated Chimneys.

If isolated chimneys are built, they shall also have hollow walls and shall be so designed and constructed that the strain upon any part thereof, due to the weight of the stack itself and to the wind pressure, shall never exceed the limits fixed elsewhere in this ordinance as the maximum strain for brick masonry.

Sec. 14. Metallic Chimneys.

In business or manufacturing buildings metallic chimneys or smoke pipes shall not be used in such manner as to pass through the floors or roofs of the same, unless such metallic smoke pipes or chimneys are enclosed in brick or tile walls and the pipe from bottom to top inside of said building. Where such metallic smoke pipe or chimney passes through the roof only, it shall be separated from the woodwork of such roof by at least twelve (12) inches of incombustible material.

Sec. 15. Vent Pipes.

Vent flues or ducts for the removal of foul or vitiated air in which the temperature is the same as that of the rooms, may be constructed of iron, or other incombustible material, and shall not be placed nearer than one (1) inch to any woodwork, and no such pipe shall be used for any other purpose.

In the support of construction of such ducts, no wood furring or other inflammable material shall be nearer than two (2) inches to said flues or ducts, and shall be covered on all sides other than those resting against brick, terra cotta, or other incombustible material, with metal lath plastered with at least two (2) heavy coats of mortar, and having at least one-half ($\frac{1}{2}$) inch air space between the flues or ducts and the lath and plaster.

Sec. 16. Steam and Hot Water Heating Pipes.

Steam and hot water heating pipes shall not be placed within two (2) inches of any timber or woodwork, unless the timber or woodwork is protected by a metal shield, then the distance shall not be less than one-half ($\frac{1}{2}$) inch. All steam or hot water heating pipes passing through floors and ceilings, or lath and plastered partitions, shall be protected by a metal tube one (1) inch

larger in diameter than the pipe, having a metal cap at the floor and ceiling, and where they run in a horizontal direction between the floor and the ceiling they shall be supported on iron and a metal shield shall be placed on the under side of floor over them, and on the sides of wood beams running parallel with said pipes; or said horizontal pipes shall be covered with incombustible pipe covering at least three-quarters ($\frac{3}{4}$) of an inch thick. In no case shall lateral branches from rising lines to radiators or coils be allowed between any floor and ceiling line when such laterals cut into or through joists or beams, and when such pipes are inaccessible concealed, they shall be covered with incombustible material.

Sec. 17. Wood Casings.

All wood boxes or casings enclosing steam or hot water heating pipes, and all wood coverings to recesses in walls, in which steam or hot water heating pipes are placed, shall be lined with metal, or said pipes shall be covered with incombustible sectional pipe covering at least three-quarters ($\frac{3}{4}$) of an inch thick.

Sec. 18. Incombustible Pipe Covering.

No concealed pipe shall be covered with a covering whose non-conductivity depends upon cork, felt, or any other organic matter.

All coverings of heated surfaces, or surfaces requiring to be protected from heat, and all concealed or inaccessible steam or hot water pipes, and all cold and ice water pipes, or other pipes, shall be made of standard fire-resisting covering, either of Magnesium Carbonate, Calcium Carbonate with binders of asbestos fibre, or asbestos fibre or equally as good sheet covering.

Sec. 19. Ducts for Pipes.

All ducts for hot air, steam or hot water pipes, shall be enclosed on all sides with fireproof material, and the opening through each floor shall be properly fire-stopped.

Sec. 20. Registers.

Registers located over a brick furnace shall be supported by a brick shaft built up from the cover of the

hot air chamber; said shaft shall be lined with a metal pipe, and all wood beams shall be trimmed away not less than four (4) inches from it. Where a register is placed on any woodwork in connection with a metal pipe or duct, the end of the said pipe or duct shall be flanged over on the woodwork under it. All registers for hot air furnaces placed in any woodwork or combustible floors shall have stone or iron borders.

All register boxes shall be made of tin plate or galvanized iron with a flange on the top to fit the groove in the frame, the register to rest upon the same; there shall be an open space of two (2) inches on all sides of the register box, extending from the under side of the border to and through the ceiling below. The said opening shall be fitted with a tight tin or galvanized iron casing, the upper end of which shall be turned under the frame. When the register box is placed in the floor over a portable furnace, the open space on all sides of the register box shall not be less than three (3) inches. When only one register is connected with a furnace said register shall have no valve.

Register boxes, heads or collars in floors or walls shall be made double and set flush with floor or plaster line.

Sec. 21. Notice as to Heating Apparatus.

In cases where hot water, steam, hot air or other heating appliances or furnaces are hereafter placed in any building, or flues or fireplaces are changed or enlarged, due notice shall first be given to the Inspector of Buildings by the person or persons placing or causing the placing of said furnace or furnaces in said building or by the contractor or superintendent of said work.

Sec. 22. Drying Rooms.

All walls, ceilings and partitions enclosing drying rooms, when not made of fireproof material, shall be wire lathed and plastered, or covered with metal, tile or other incombustible material.

Sec. 23. Heating Apparatus in Basements.

All rooms in cellars or basements containing heating boilers, furnaces or stoves of any kind, if not constructed of fireproof material, shall have all ceilings lathed and

plastered with two (2) coats of brown mortar.

When heating boilers are used, that portion of the ceiling over the boiler within a radius of four (4) feet therefrom shall be plastered on metal lath or be protected by incombustible shields.

Sec. 24. Any person, firm or corporation, servant or agent constructing any building in violation of the provisions of this ordinance, or any person who shall assist in the violation or shall fail to comply with any of the provisions of this ordinance, or shall construct or alter any building in violation of any detailed statement of application, plans and specifications submitted or approved thereof, provided such detailed statement or plans as accepted are according to the provisions of this ordinance and in case it is not, it shall be no defense to any violation of this ordinance that such plans or any part thereof were accepted by any officer of the City of Milwaukee or passed upon with approval thereof or any building permit issued thereunder subject to the above provisions shall for each and every such violation or non-compliance for each and every day thereof be liable to a fine of not less than ten (10) dollars nor more than five hundred (500) dollars or in default of fine by imprisonment in the House of Correction of Milwaukee County not more than six months.

Sec. 25. All ordinances or parts of ordinances contravening the provisions of this ordinance are hereby repealed.

Sec. 26. This ordinance shall take effect and be in force from and after twenty days following its passage and publication.

Passed August 4, 1913.

AN ORDINANCE

To Regulate, that Hydro Carbon Oils, Turpentine, Varnishes and Rubber Cement shall be Stored as Hereinafter Provided for.

The Mayor and Common Council of the City of Milwaukee do ordain as follows:

Storage of Crude Petroleum and Fuel Oil.

Section 1. Crude petroleum and fuel oil in a total quantity exceeding 120 gallons on any premises shall be stored in tanks. No more than two (2) tanks containing 300 gallons each shall be stored underneath any building, and they shall be buried at least two (2) feet under the surface of the lowest floor and covered with at least two (2) feet of ground. Where tanks or any part thereof are above the surface of the ground and are situated less than fifty (50) feet from any adjoining premises, building or structure other than the buildings or structures upon the premises, wherein such crude petroleum or fuel oil is to be used or stored, such tanks shall be separated from any such buildings or structures by an enclosing wall of brick, stone or concrete; such wall shall be not less than five (5) feet high nor less than two (2) feet above the top of the tanks. If such wall be ten (10) feet high or less, it shall be at least twelve (12) inches in thickness, if more than ten (10) feet high the walls shall be at least sixteen (16) inches in thickness, but no wall shall be of a greater height than twenty-four (24) feet. Such wall shall entirely surround or enclose such tank or tanks at a distance of not less than eighteen (18) inches from the outside of the tank, and such wall shall not be nearer than ten (10) feet to adjoining premises. Any opening in such wall to permit access to the tanks shall contain a door liquid tight and made of incombustible material, either sliding or opening inward and of sufficient strength to resist any pressure of the liquid contents of the tank which may be brought to bear upon such door by the bursting of the tank enclosed in such walls. The floor of such tank enclosure shall be not less than three (3) nor more than five (5)

feet below the adjoining grade. The capacity of each tank shall not exceed fifteen thousand (15,000) gallons.

Not more than ninety thousand (90,000) gallons in tanks partly or wholly above ground or in a building of fireproof construction shall be stored on any premises unless stored in buildings as provided for in Sec. 6, or in underground tanks covered with not less than two (2) feet of earth.

Storage of Refined Oils, Turpentine, Varnishes and Paints in Liquid Form.

Sec. 2. (a) Refined hydro carbon oils of 150 degrees F. fire test by the John Taglibue method, turpentine, varnishes and other inflammable liquids which do not give off inflammable vapors, in a quantity exceeding sixty-two (62) gallons shall be stored in tanks of the provision of section 5 regulating tanks.

(b) Not more than sixty thousand (60,000) gallons in tanks partly or wholly above ground or in a building of fireproof construction shall be stored on any premises unless stored in buildings as provided for in section 6, or in underground tanks covered with not less than two (2) feet of earth.

These tanks may be placed on any floor of any building used for the storage of oils mentioned in this section, but not in a greater quantity than one hundred and twenty (120) gallons for refined oils and varnishes or ten (10) gallons of turpentine above the first floor, and not more than six hundred (600) gallons in total quantity of refined oils and varnishes or one hundred and twenty (120) gallons of turpentine on basement and first floor together.

The capacity of each tank shall not exceed three hundred (300) gallons. No such building shall be used for residence purposes, hotel, tenement, lodging house, or place of assemblage. Anything in this section shall not apply to refined oils, turpentine or varnishes being used for mixing or manufacturing of paints and similar products.

Retail dealers in kerosene and refined oils may store such oils in a quantity not exceeding sixty-two (62) gallons in metallic cans on the first floor or in the

basement of the building occupied by such dealer. Any quantity in excess of sixty-two (62) gallons shall be stored in tanks installed as specified in section 5 of this ordinance.

Storage of Naphthas.

Sec. 3. Naphthas in a quantity not exceeding five (5) gallons may be stored in a building, structure or premises in metallic safety cans made of not less than twenty-four (24) U. S. Standard Gauge galvanized steel with openings protected by self-closing valves, and such cans shall not have a capacity of over five (5) gallons. This limitation of five (5) gallons shall not apply to such oils in use in machines when the oils are supplied to or from such machines through closed pipes or by safety filling cans, nor in buildings constructed according to Sec. 6.

No Naphthas shall be kept or stored within fifteen (15) feet of any open flame. Tanks for the storage of naphthas shall be placed underground and covered with not less than two (2) feet of earth, and if located more than twenty-five (25) feet from any building or adjoining boundary lines shall be limited to a capacity of 12,000 gallons and not more than two (2) such tanks shall be installed; tanks placed less than twenty-five (25) feet from any building or adjoining boundary line shall be limited to a capacity of three hundred (300) gallons and not more than six (6) such tanks shall be installed. Underneath a fireproof building used solely for dry cleaning purposes not more than six (6) tanks of not over three hundred (300) gallons each shall be allowed, and underneath any other building not more than two (2) such tanks shall be allowed, but, no such building shall be used for residence purposes, hotel, tenement or lodging house or place of assemblage.

Any quantities of naphthas exceeding those mentioned in this section shall be stored in buildings as provided for in Section 6.

Rubber Cement.

Sec. 4. The total quantity of rubber cement and substances of a like nature stored in any building or premises shall not exceed ten (10) barrels or six hun-

dred (600) gallons and shall be stored in fireproof vaults, which shall not be located above the first story, the opening to such vault shall be outside of the building.

Five (5) gallons of this material may be used in any department but shall be returned to the vault when not in use.

Tanks.

Sec. 5. Tanks shall be galvanized or black open hearth tank steel of at least 16 gauge with tensile strength to withstand the liquid pressure with a factor of safety of not less than 4; coated on the outside with rust-resisting materials; shall have no openings or pipe connections except on top thereof; shall not be connected directly or indirectly.

All pipes leading to or from such tanks shall be galvanized wrought iron with heavy galvanized cast iron or brass fittings, and connected with the tank at the top of same protected against injury and so laid that the contents shall drain back to the tank. Each tank shall be provided with an iron vent pipe not less than one and one-half ($1\frac{1}{2}$) inches in diameter, connected with the top of same and provided with a screen of thirty (30) mesh at or near the tank connections, and extending two feet above the roof, provided with return bend with thirty (30) mesh brass wire screen. If there is no building within thirty (30) feet of such tank, said vent pipe shall terminate in a return bend and screen which may be flush with the surface of the ground; if said tanks are located underground, they shall not be covered up or used until the Inspector of Buildings has examined same.

Tanks for the storage of oils or liquids mentioned in this ordinance containing not more than three hundred (300) gallons may be installed underneath buildings as mentioned in Sec. 3. The top of such tanks shall be at least two (2) feet below the surface of the basement floor, and covered with earth or concrete.

The filling pipes of tanks underneath building as provided in this paragraph shall terminate outside of the building in an iron box which shall be provided with a cover which shall be kept locked when not in

use. The vent and filling pipes of tanks shall be run underneath an incombustible basement floor until they reach the outside of the building. Such tanks shall, for the purpose of bringing the liquids mentioned in this ordinance to the delivery point, be provided with suction systems or pumps or any other devices that depend for their operation upon the weight of water, which water shall not be under pressure.

Buildings.

Sec. 6. Buildings designed for the storage of hydro carbon oils and naphthas, in greater quantities than mentioned in the foregoing section shall be constructed of fire-resisting material throughout.

No such building shall be located less than twenty-five (25) feet from any other building or from adjoining premises.

The floor of such building erected after the passage of this ordinance shall not be less than three nor more than (5) feet below the grade of the adjoining property or highway and shall be made of earth, concrete or brick.

The walls shall be of stone, brick or concrete, and shall not be less than sixteen (16) inches thick, or more than twenty-four (24) feet high. If the floor area exceeds five thousand (5,000) square feet, dividing walls shall be built. The floor area of any compartment shall not exceed five thousand (5000) square feet and dividing wall of which shall not have any opening.

At least 25 per cent of the floor area shall be reserved for passageways at least 36 inches in width each.

Such building shall be detached from all other buildings and shall be ventilated by at least one square foot of area for every five hundred (500) square feet of area of building. Such ventilators shall be equally distributed through such building.

Such building shall be occupied for no other purpose than the storage of oils, and the transaction of the business in connection therewith.

Where artificial light is used the same shall be by vapor proof incandescent lamps enclosed in metal cages with keyless sockets; wires shall be run in rigid

fire-proof conduits and the switches, cut-outs, circuit breakers and motors located outside of such building.

Hot water or steam heat for heating purposes only shall be used. It shall be unlawful to have any heat generating boiler, dynamo or motor within such building.

No such tank shall be connected either directly or indirectly with any public or private sewer, drain or catch basin unless an approved oil separator is provided, or unless such tank in and of itself, or together with its fitting, is capable of performing the functions of an oil separator, and so installed as to prevent the discharge of any of the liquids mentioned in this ordinance into said sewers, drain or catch basins.

Sec. 7. Before proceeding with the erection, alteration, remodeling or repairing of any building or enclosure walls or installation of tanks for the storage of any liquids as required by this ordinance a building permit shall first be obtained from the Inspector of Buildings.

Before the Inspector of Buildings shall issue such permit an application for such permit shall be filed with him, by the owner or agent of such building, enclosure wall or tank together with plans and specifications showing full detail of location, erection, remodeling, alteration, repairs, or installation of the tank with its connection, fittings, openings and safety appliances, and he shall have a reasonable time thereafter to examine the same for a permit to be given, and no permit shall be given unless the conditions of this ordinance are fulfilled in each and every particular thereof and unless the applicant has paid into the General City Fund the sum of two dollars (\$2.00) as a permit fee for the installation of each tank and the required permit fee for new buildings or alterations of present buildings.

If such application, plans and specifications show that such building or enclosing wall is to be erected, altered, remodeled or repaired, or such tanks are to be installed, with all their fittings, connections, openings and safety appliances in conformity with the provisions

of this ordinance the Inspector of Buildings shall issue a building permit to such applicant.

Sec. 8. Any provision of any ordinance contravening the provisions of this ordinance is hereby modified and repealed.

Sec. 9. Any person, firm or corporation controlling or managing any building or premises wherein or whereon any of the liquids mentioned in this ordinance are stored or kept for sale in violation of any of the provisions of this ordinance, or any person who shall assist in such violation, or shall fail to comply with any of the provisions of this ordinance, or shall build in violation of any detailed statement of application, plans and specifications submitted or approved thereof, provided such detailed plan as accepted is according to the provisions of this ordinance, and in case it is not it shall be no defense to any violation of this ordinance that such plans or any part thereof were accepted by any officer of the City of Milwaukee or passed upon with approval thereof, or any building permit issued thereunder subject to the above provisions, shall for each and every such violation or non-compliance for each and every day thereof be liable to a fine of not less than ten (10) dollars nor more than two hundred (200) dollars, or in default of payment of fine, by imprisonment in the House of Correction not more than six months.

Sec. 10. This ordinance shall take effect and be in force from and after twenty days following its passage and publication.

Passed March 31, 1913.

UNIVERSITY OF ILLINOIS-URBANA



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